Regional Views

Mapping Our Progress[1]

Washington's statewide recovery strategy says our habitat, harvest, hatchery, and hydropower activities will benefit wild salmon. State, federal, local, and tribal programs all have an influence on how this is accomplished. Recovery plans developed by regional organizations have inventoried and assessed current conditions, examined options for improving these conditions, agreed on goals, and proposed implementation actions by all that would achieve the goals. Implementation has begun. But, we need to routinely collect information all along the path that will help us stay on a course that achieves our goals.

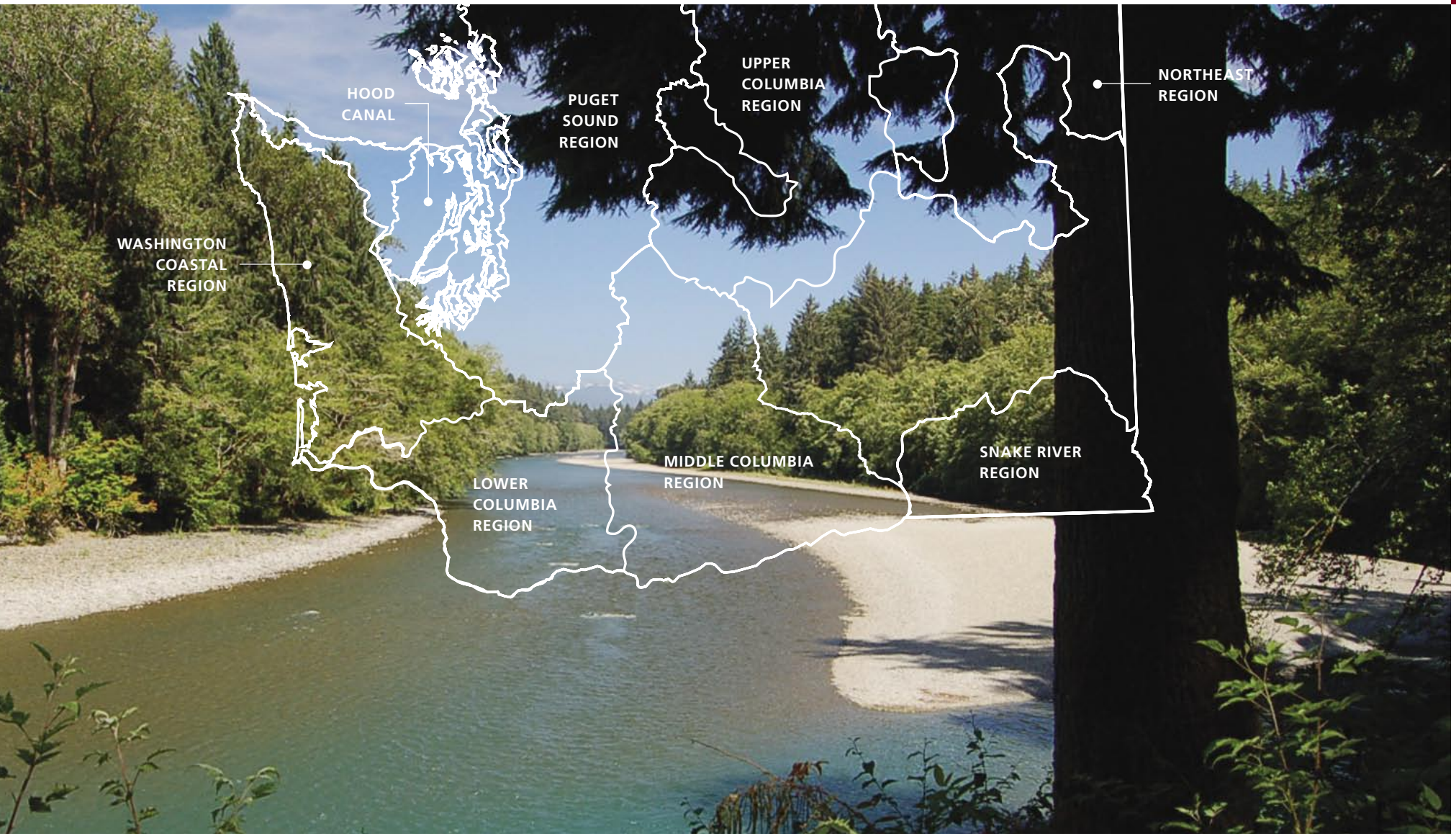
Those working on monitoring and adaptive management in watershed and regional recovery efforts have made great strides but in most cases those chapters of plans are still in construction. In general, however, they all contain important common goals and objectives. They want to improve the certainty that the actions undertaken are having the desired results, and that the actions are contributing to an increase in the character of salmon populations that eventually will determine whether those populations can be removed from the Endangered Species Act (ESA) list. It is also important that they are able to provide information on how the habitat upon which salmon depend is improving.

Simply put, monitoring should tell us, "Did we make it?"

At the same time, there will be limits to our ability to answer all high level questions at all scales, everywhere, all of the time. We will need to make informed choices about the most important things to monitor. Identifying key questions is an essential step toward that end.

> "...on my return to my lodge an indian called me in to his bower and gave me a small morsel of the flesh of an antelope boiled, and a peice of a fresh salmon roasted; both which I eat with a very good relish. this was the first salmon I had seen and perfectly convinced me that we were on the waters of the Pacific Ocean."
>
> **MERIWEATHER LEWIS, AUGUST 13, 1805**

Salmon Recovery Regions



CHRIS DRIVDAHL

Some Key Questions

In 2000, we posed some questions that we wanted our high level statewide monitoring programs to answer. These questions informed selection and use of the indicators in the statewide "Dozen Dials." For this report we also applied them to the regional scale and asked agencies and regional organizations to address the following questions and indicators:

Question:

Are hydroelectric facilities operating in a fish friendly manner?

Measures:

- Upstream passage goals at FERC licensed facilities
- Actual passage achieved
- Downstream passage goals
- Actual passage achieved

Question:

Are streams accessible to wild salmon?

Measures:

- Barriers to anadromous fish passage
- Miles of anadromous waters blocked

Question:

Do rivers and streams have flows that support wild salmon?[2]

Measures:

- Instream flows set[3]
- Percent of time flow is met during low flow periods critical for fish[4]

Question:

Is water clean and cool enough to support wild salmon?[5]

Measures:

- Number of stream segments where waters did not meet water quality criteria for temperature, dissolved oxygen, pH, and fecal coliform[6]

Question:

Are listed populations abundant and productive?[7]

Measures:

- Run size wild component, 5 year average pre-listing and post-listing
- Wild juvenile production, change from baseline mean[8]

Question:

Does harvest protect wild salmon?[9]

Measures:[10]

- Recovery plan spawner escapement goal
- Number of wild spawners
- Percent of wild fish harvested

Question:

Do hatchery practices meet the needs of wild fish?

Measures:

- Scientific evaluation of hatchery practices
- Actions accomplished from scientific evaluation

As regional organizations mature and complete their monitoring plans, the recovery indicators and measures will evolve. The regional indices we introduced in our last report will also be re-evaluated for their possible contribution to the regional picture. Until then, the following pages offer a quick look at what we know—and sometimes, what we don't know—about our progress in some regional scale indicators.

CHRIS DRIVDAHL

New for 2006

Members of the Squaxin Island Tribe participate in the First Salmon Ceremony.

Northeast and Washington Coastal Regions

We are presenting information for the Northeast and Washington Coastal salmon recovery regions for the first time. Talks among the stakeholders and local, state, federal, and tribal governments are under way in both regions to evaluate how to best integrate the work that has already been done in lead entity habitat planning with larger scale recovery efforts. As recovery goals are adopted, we will expand coverage of these regions to match the others in this report.

Nearshore Ecosystems

We've added indicators that we think are important contributors to answering the question, "Do our nearshore ecosystems meet the needs of wild salmon?" Following recommendations of the Washington Comprehensive Monitoring Strategy for Watershed Health and Salmon Recovery, we have included snapshots of three important factors:

Percent of Shoreline Modification Shallow estuarine and nearshore habitats are structurally complex and dynamic. All juvenile salmon move along the shallows of estuaries and nearshore areas during their migration to the sea, and may be found in these habitaats throughout the year. Changes in the shorelines, which are particularly prevalent in the most populated areas of Washington, simplify and reduce intertidal habitat areas. These modifications affect migrant corridors, transition of the fish from fresh to salt water, their eating habitats, and their ability to forage and seek refuge from predators.

Herring Spawning Areas Forage fish in general, and herring specifically, are vital components of the marine ecosystem and are a valuable indicator of the overall health of the marine environment. Chinook and coho, as well as many species of sea birds and marine mammals, depend on herring as an important prey item. Reductions of herring spawning have a direct effect on salmon productivity.

Eelgrass Concentrations Eelgrass is considered one of the most important components of nearshore marine environments for salmon. Eelgrass beds grow in shallow bays and coves, tidal creeks, and estuaries. Damage to eelgrass affects whole populations of fish, as well as the stability of our shorelines.

Also new for this report are the **Watershed Watch** sections. These are found for each region with a recovery plan, where we look more in-depth at an example watershed and examine how well we are able to answer the questions developed in 2000.

Puget Sound Salmon Recovery Region

CHRIS DRIVDAHL

Puget Sound Basin lies between the Cascade and Olympic mountains in Northwest Washington. It is the second largest estuary in the United States and covers more than 16,000 square miles. Twenty percent of the area is land, as diverse as farms, forests, parks, small towns, and busy cities. The remainder is freshwater, estuarine, and marine waters; over 20 major river systems and their tributary creeks drain mountain elevations of 7000 feet or more and drop to sea level within 50 to 70 miles.

Puget Sound is home to two-thirds of the state's population. Draft Puget Sound Chinook and bull trout recovery plans were completed in June 2005 and posted in the Federal Register in December 2005. The draft Hood Canal summer chum recovery plan was submitted in November 2005 and placed in the Federal Register in August 2006.

Key Facts

LISTED FISH

Chinook (threatened)
Hood Canal summer chum (threatened)
Bull trout (threatened)

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Degraded nearshore/marine and estuarine conditions and habitat loss
- Degraded riparian area and loss of in-river large woody debris
- Excessive sediment
- Degraded water quality and temperature
- Impaired instream flows
- Barriers to fish passage

RECOVERY PLANNING STATUS

Draft recovery plans completed for Chinook in June 2005 and posted in Federal Register December 2005. Final adoption by NMFS expected January 2007. Draft summer chum plan submitted in November 2005 and placed in Federal Register August 2006.

REGIONAL RECOVERY ORGANIZATION

Puget Sound Shared Strategy (for Chinook); Hood Canal Coordinating Council (for summer chum).

FEDERALLY RECOGNIZED TRIBES

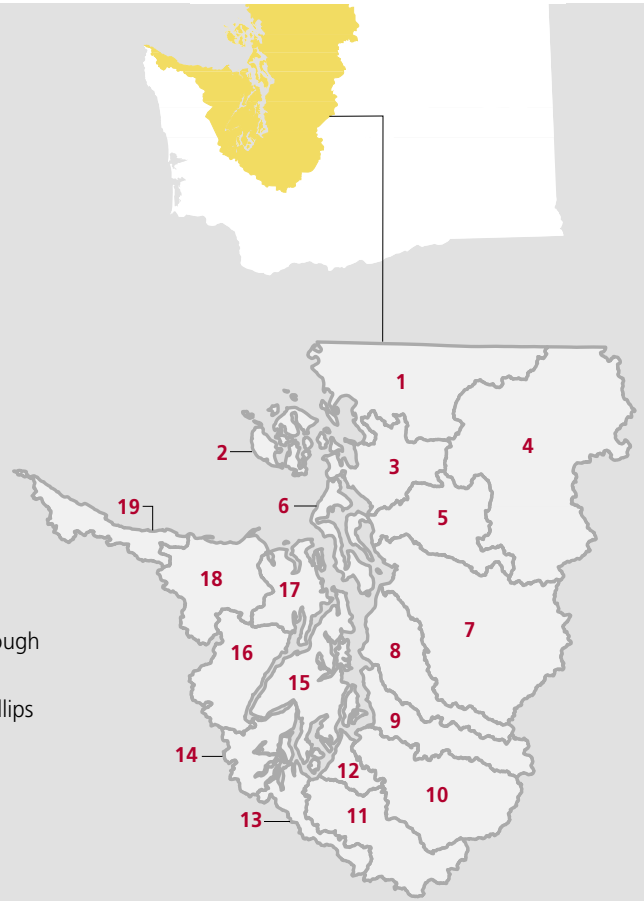
Lummi Nation, Nooksack, Stillaguamish, Jamestown S'Klallam, Muckleshoot, Nisqually, Port Gamble S'Klallam, Lower Elwha S'Klallam, Puyallup, Samish, Sauk-Suiattle, Skokomish, Squaxin Island, Stillaquamish, Suquamish, Swinomish, Tulalip, Upper Skagit, Snoqualmie.

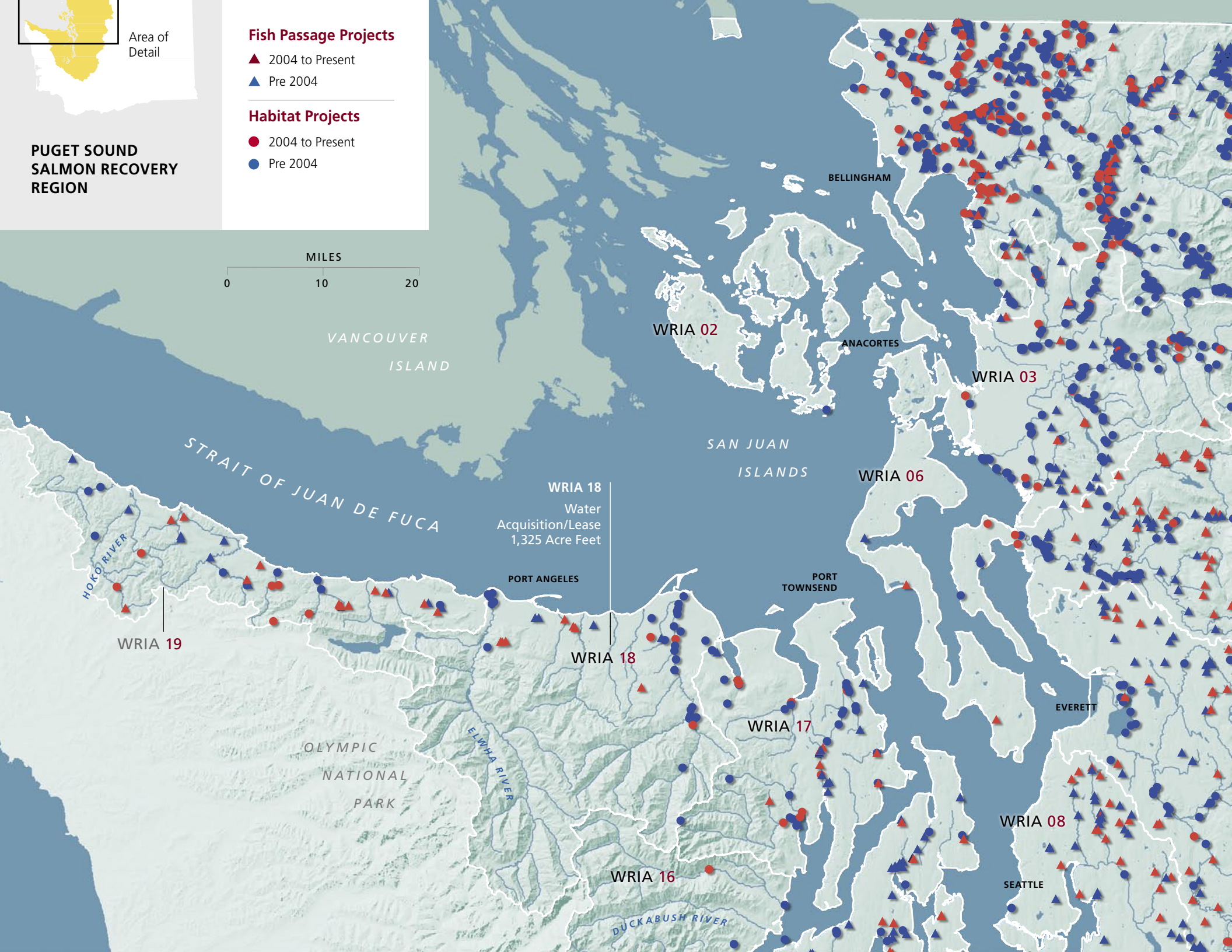
COUNTIES

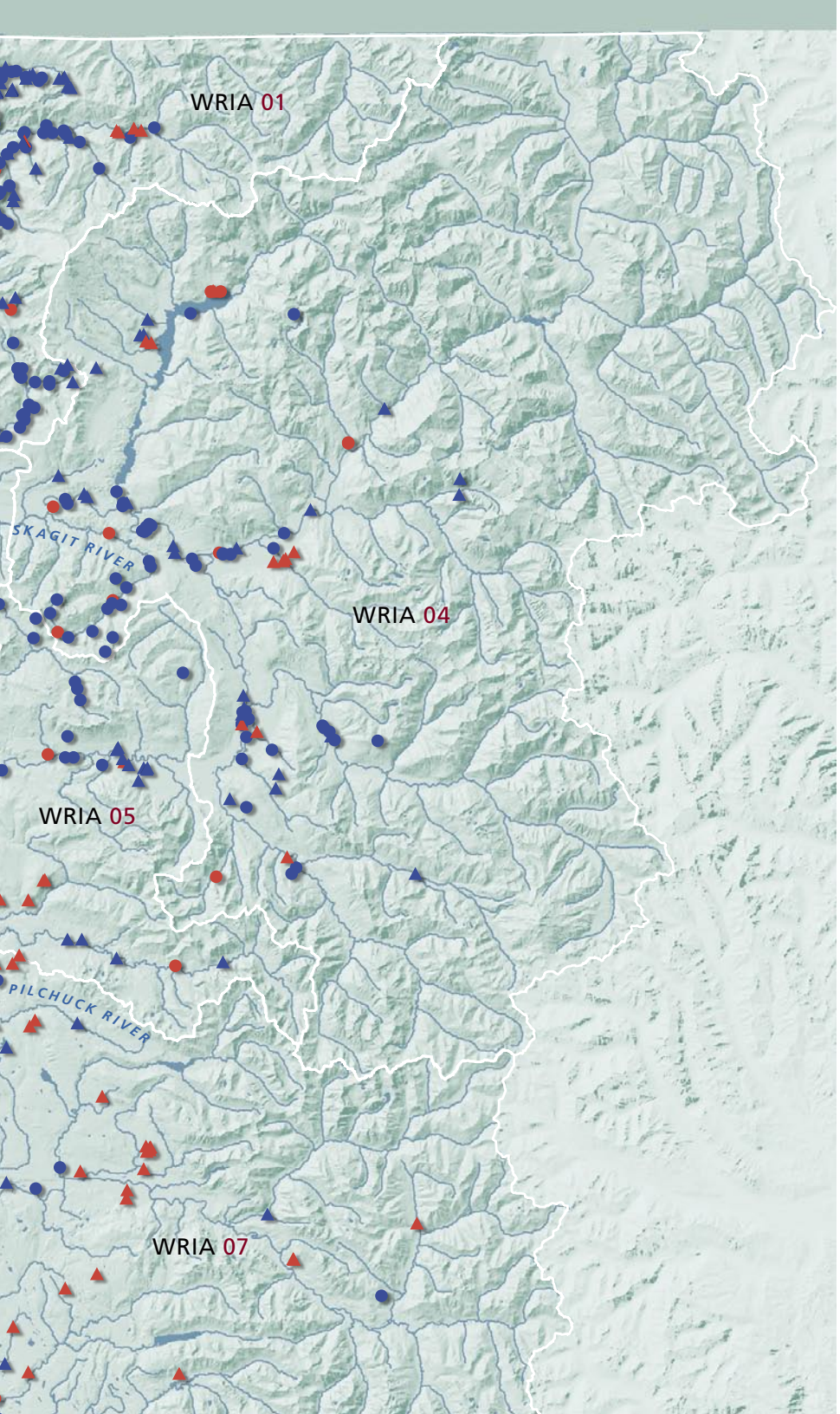
All or parts of Whatcom, Skagit, Island, San Juan, Snohomish, King, Pierce, Thurston, Mason, Kitsap, Jefferson, and Clallam.

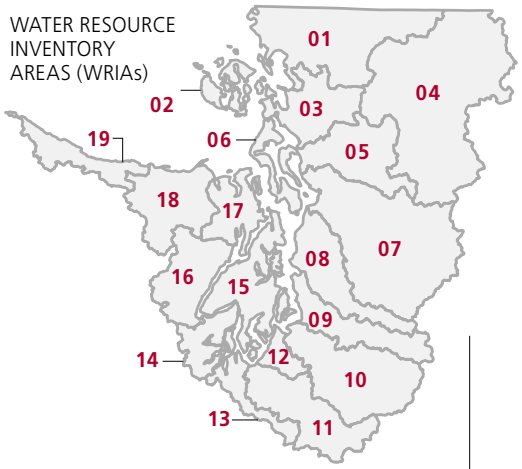
WATER RESOURCE INVENTORY AREAS (WRIAs)

01 Nooksack
02 San Juan
03 Lower Skagit
04 Upper Skagit
05 Stillaguamish
06 Island
07 Snohomish
08 Cedar / Sammish
09 Green / Duwamish
10 Puyallup / White
11 Nisqually
12 Chambers / Clover
13 Deschutes
14 Kennedy / Goldsborough
15 Kitsap
16 Skokomish / Dosewallips
17 Quilcene / Snow
18 Elwha / Dungeness
19 Hoko / Lyre




Area of Detail
PUGET SOUND SALMON RECOVERY REGION
Fish Passage Projects
2004 to Present
Pre 2004
Habitat Projects
2004 to Present
Pre 2004
MILES
0
10
20
VANCOUVER ISLAND
STRAIT OF JUAN DE FUCA
SAN JUAN ISLANDS
BELLINGHAM
ANACORTES
PORT ANGELES
PORT TOWNSEND
EVERETT
SEATTLE
WRIA 02
WRIA 03
WRIA 06
WRIA 08
WRIA 16
WRIA 17
WRIA 18
WRIA 19
WRIA 18
Water Acquisition/Lease
1,325 Acre Feet
HOKO RIVER
ELWHA RIVER
DUCKABUSH RIVER
OLYMPIC NATIONAL PARK

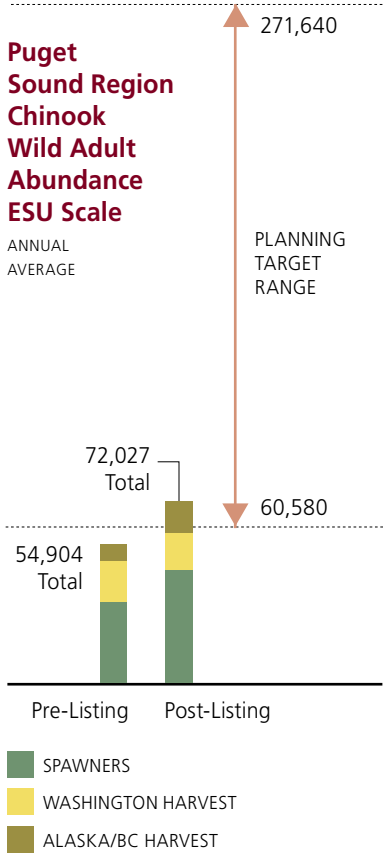




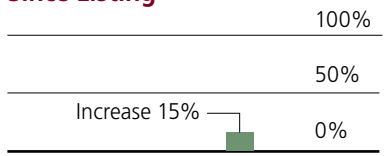
Watershed Cleanup Plans

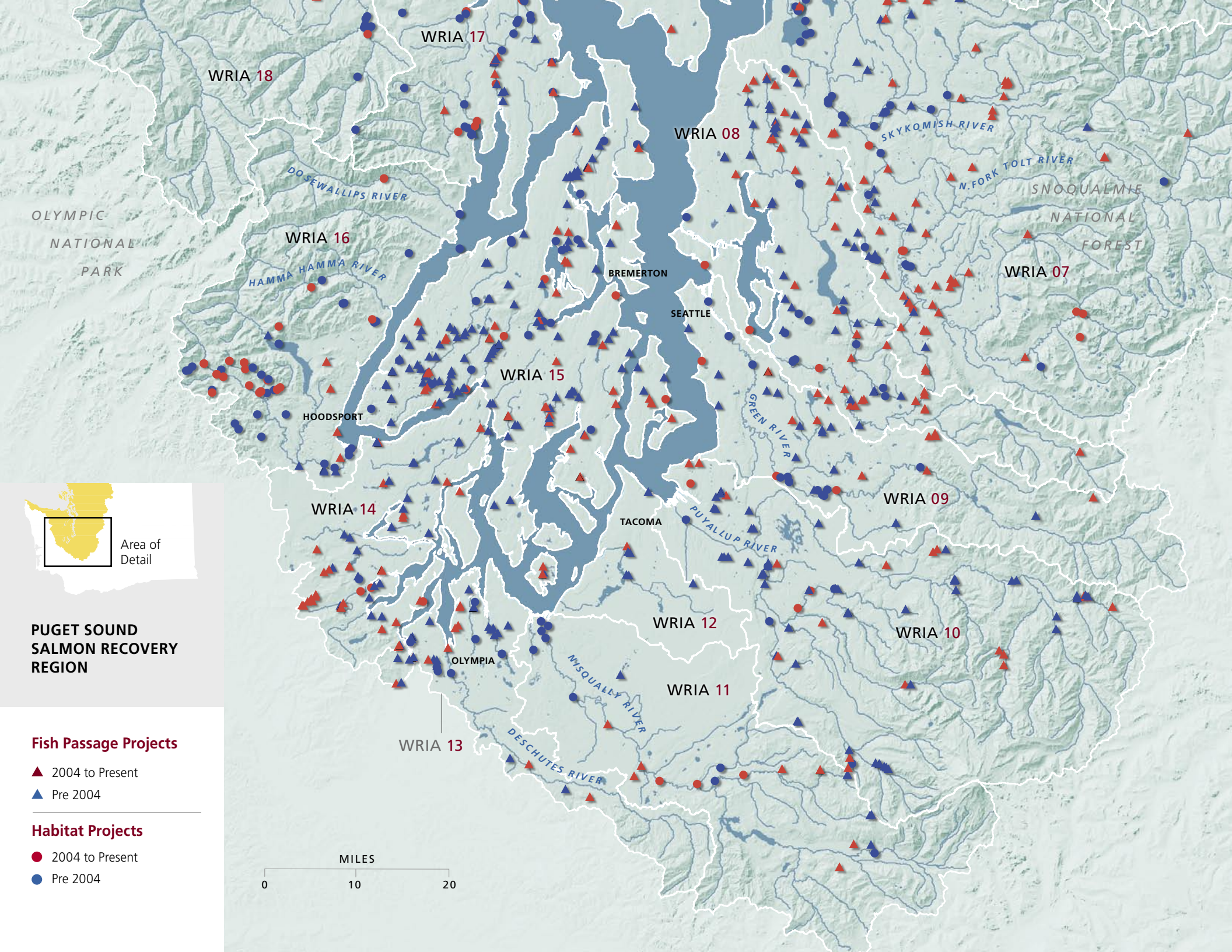
	Plans underway or completed	Plans Needed
WRIA **01**	94	175
WRIA **02**		3
WRIA **03**	32	68
WRIA **04**	1	1
WRIA **05**	43	51
WRIA **06**	3	3
WRIA **07**	57	40
WRIA **08**	33	162
WRIA **09**	23	151
WRIA **10**	42	60
WRIA **11**	5	21
WRIA **12**	3	20
WRIA **13**	10	66
WRIA **14**	10	67
WRIA **15**	88	156
WRIA **16**	12	21
WRIA **17**	6	29
WRIA **18**	16	26
WRIA **19**		16

Puget Sound Region Chinook Wild Adult Abundance ESU Scale

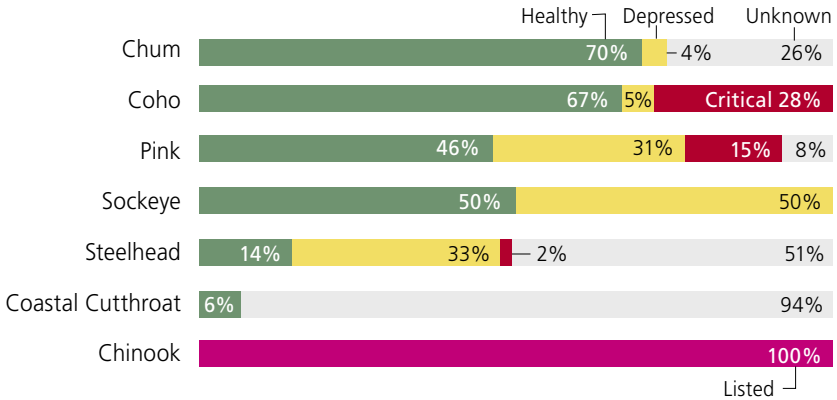


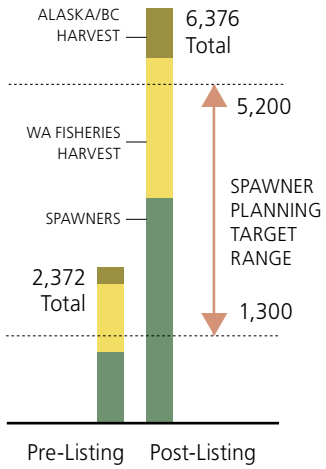
Puget Sound Region Wild Chinook Juvenile Production Since Listing




WRIA 17
WRIA 18
WRIA 08
SKYKOMISH RIVER
N.FORK TOLT RIVER
SNOQUALMIE
NATIONAL
FOREST
DOSEWALLIPS RIVER
OLYMPIC
NATIONAL
PARK
WRIA 16
HAMMA HAMMA RIVER
BREMERTON
SEATTLE
WRIA 07
WRIA 15
HOODSPORT
GREEN RIVER
WRIA 14
TACOMA
PUYALLUP RIVER
WRIA 09
WRIA 12
WRIA 10
OLYMPIA
NISQUALLY RIVER
WRIA 11
WRIA 13
DESCHUTES RIVER
Area of Detail
PUGET SOUND SALMON RECOVERY REGION
Fish Passage Projects
2004 to Present
Pre 2004
Habitat Projects
2004 to Present
Pre 2004
MILES
0
10
20

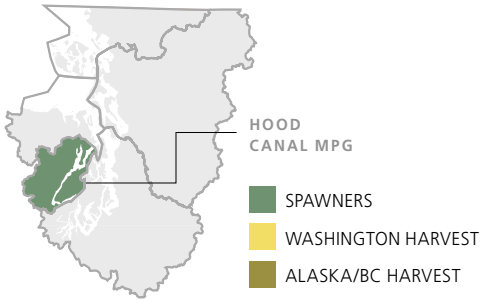
Fish Status

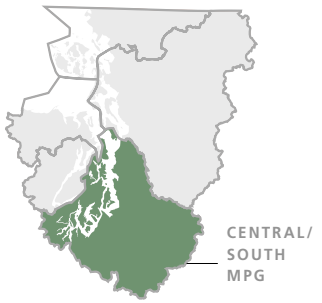




Chinook Wild Adult Abundance Hood Canal MPG

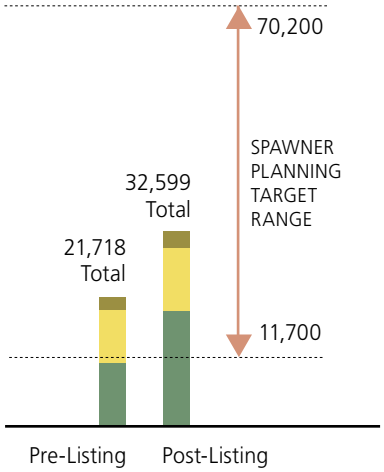
ANNUAL AVERAGE

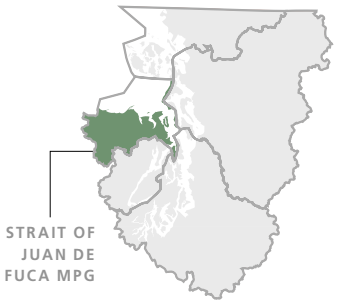




Chinook Wild Adult Abundance Central/South MPG

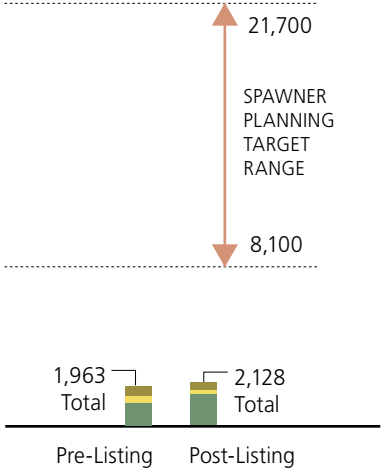
ANNUAL AVERAGE

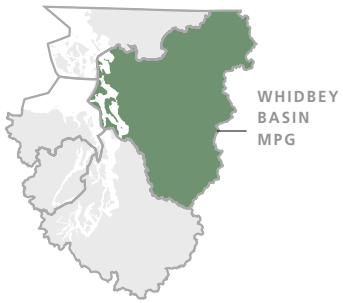




Chinook Wild Adult Abundance Strait of Juan de Fuca MPG

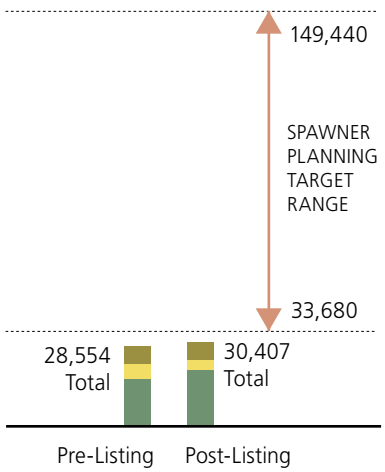
ANNUAL AVERAGE

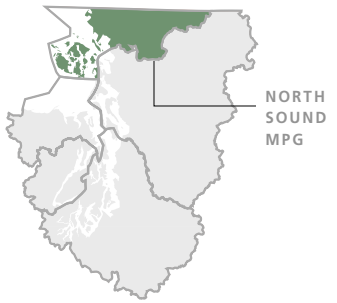




Chinook Wild Adult Abundance Whidbey Basin MPG

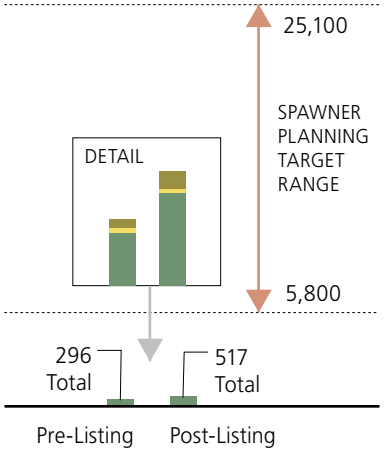
ANNUAL AVERAGE





Chinook Wild Adult Abundance North Sound MPG

ANNUAL AVERAGE



PUGET SOUND
SALMON RECOVERY
REGION

SNOHOMISH BASIN

WRIA
07

WATER
RESOURCE
INVENTORY
AREA

Watershed Watch
Snohomish Basin WRIA 07

The Snohomish River Basin lies in King and Snohomish Counties in east-central Puget Sound. It covers 1,856 square miles (1,187,840 acres) and is the second largest watershed in Puget Sound. The Snoqualmie and Skykomish rivers are the major surface waters in the watershed, and they converge to become the Snohomish River approximately 20 miles upstream of Puget Sound. Other major tributaries include the Tolt, Sultan, and Pilchuck.

The South Fork Tolt and Spada Lake Reservoirs supply water for more than a million people in Seattle, Everett, and nearby communities. About 75% of the watershed remains covered by natural vegetation. Municipal and industrial areas are concentrated along the western part of the major rivers and in and around Everett. Population growth is rapid, with a 59% growth rate projected for 2000-2030.

**Tulalip Tribes
Cultural Resources Survey
the Qwuloolt site**

TULALIP TRIBES

**Qwuloolt Site
Planned for removal
in 2009**

SALMON RECOVERY FUNDING BOARD

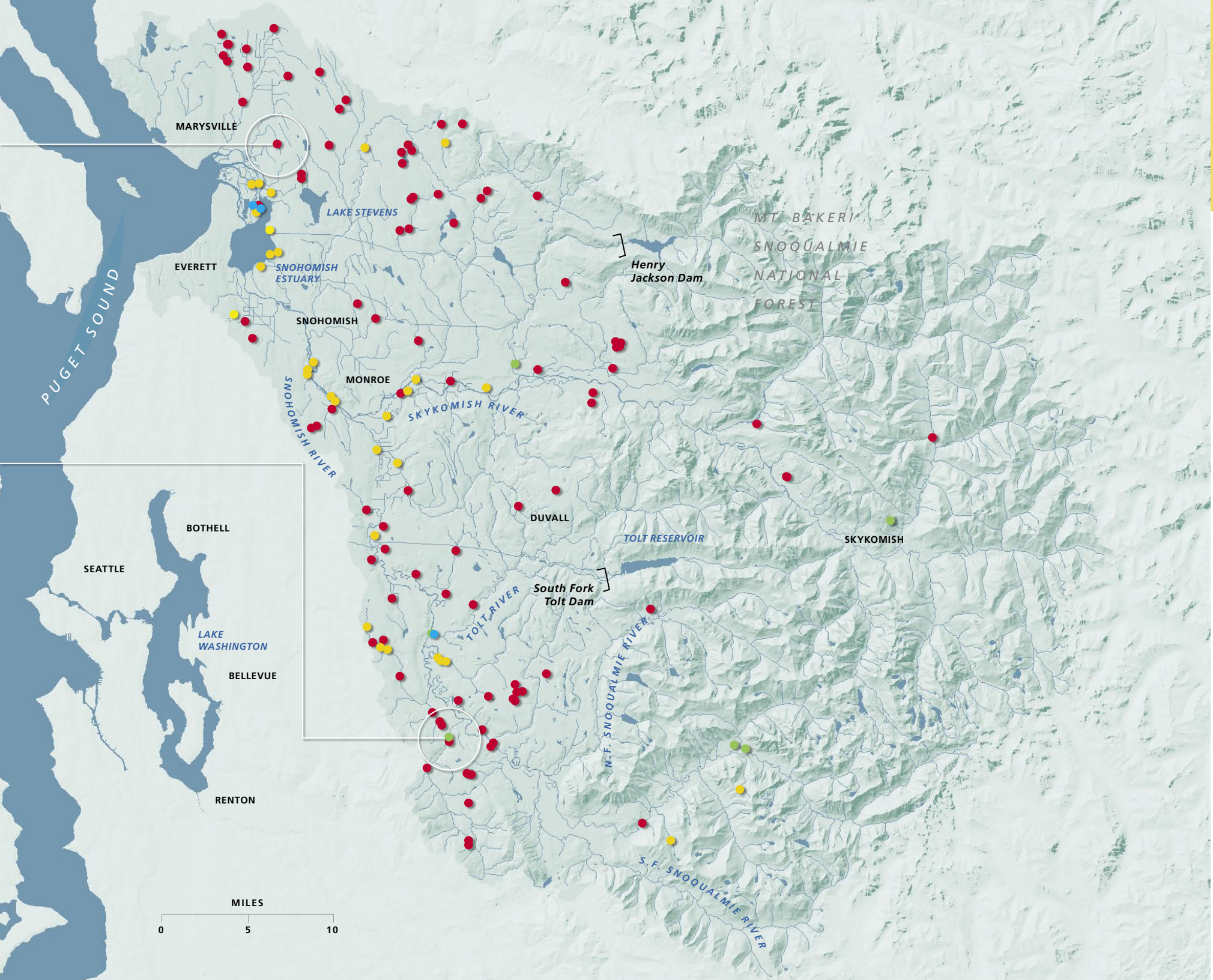
**Raging River
Restoration/Acquisition**

**Wetland and
Natural Resources
Survey Crew**

TULALIP TRIBES

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous


MARYSVILLE
LAKE STEVENS
EVERETT
SNOHOMISH ESTUARY
PUGET SOUND
SNOHOMISH
MONROE
SNOHOMISH RIVER
SKYKOMISH RIVER
Henry Jackson Dam
MT. BAKER-SNOQUALMIE NATIONAL FOREST
DUVALL
TOLT RESERVOIR
SKYKOMISH
South Fork Tolt Dam
TOLT RIVER
N.F. SNOQUALMIE RIVER
S.F. SNOQUALMIE RIVER
BOTHELL
SEATTLE
LAKE WASHINGTON
BELLEVUE
RENTON
MILES
0
5
10

PUGET SOUND SALMON RECOVERY REGION

SNOHOMISH BASIN

WRIA 07

WATER RESOURCE INVENTORY AREA

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
Upstream passage goals at FERC licensed facilities	Black Creek, May Creek, Smith Creek, Twin Falls, Weeks Falls, Woods Creek: **Unknown** Jackson Project: **None**; South Fork Tolt: **None Required**; Overall: **Unknown**
Actual upstream passage achieved (any or all years for which data are available 1999-2006)	Black Creek, May Creek, Smith Creek, Twin Falls, Weeks Falls, Woods Creek: **Unknown** Jackson Project: **None**; South Fork Tolt: **None Required**; Overall: **Unknown**
Downstream passage goals at FERC licensed facilities	Black Creek, May Creek, Smith Creek, Twin Falls, Weeks Falls, Woods Creek: **Unknown** Jackson Project: **None**; South Fork Tolt: **None Required**; Overall: **Unknown**
Actual downstream passage achieved (any or all years for which data are available 1999-2006)	Black Creek, May Creek, Smith Creek, Twin Falls, Weeks Falls, Woods Creek: **Unknown** Jackson Project: **None**; South Fork Tolt: **None Required**; Overall: **Unknown**

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete barriers: 16; Partial barriers: 24
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results
Run size achieved, 5 year average pre- and post listing. Wild component of Whidbey Basin Major Population Group.	Pre-listing: 28,554; Post-listing: 30,407
Juvenile production (baseline mean)	1,232,397

Is water clean enough to support wild salmon?

Indicator	Measured Results
Water quality index parameters	Fecal coliform: 28 meeting / 4 not meeting; Dissolved oxygen: 57 / 7; pH: 59 / 5; Temperature: 50 / 16

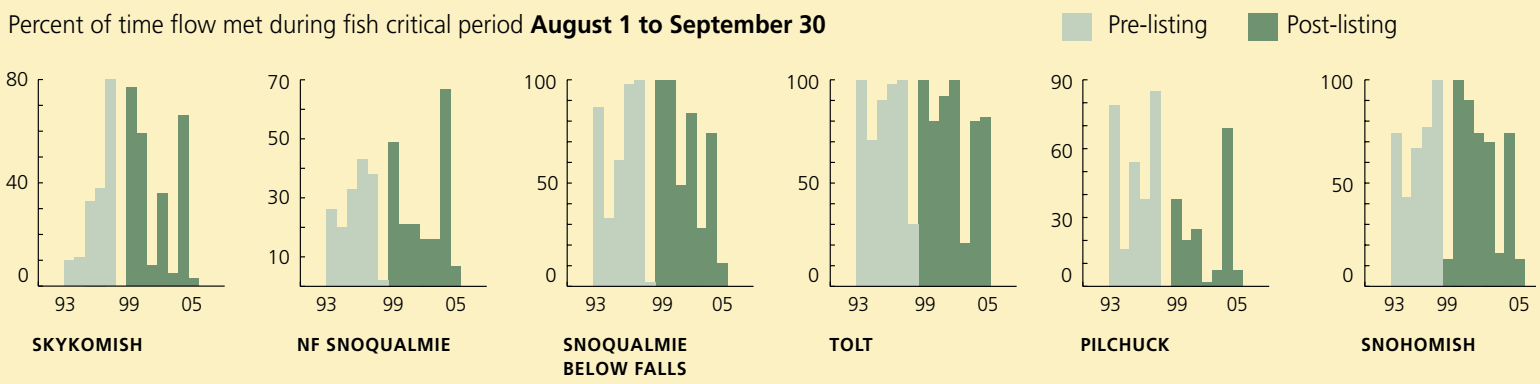
Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flow set	Rule filed 1979, 50% exceedence allowance

Percent of time flow met during fish critical period **August 1 to September 30**



Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing (Whidbey Basin MPG scale)	Pre-listing 16,665 Post listing 20,385 RECOVERY PLAN SPAWNER PLANNING TARGET RANGE 33,680 (high productivity) 149,440 (low productivity)
Percent of wild salmon run that is harvested 5 year average pre- and post listing (Whidbey Basin MPG scale)	Pre-listing 42% of wild run Post listing 33% of wild run

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does a scientific evaluation of practices exist?	Yes, Hatchery Scientific Review Group
If so, what actions have been accomplished?	29 Implemented; 18 Ongoing; 11 Not Begun

Puget Sound Salmon Recovery Region Hood Canal

PHOTOS BY CHRIS DRIVDAHL

The Hood Canal / Eastern Strait of Juan de Fuca summer chum salmon recovery planning area includes portions of Jefferson, Mason, Clallam, and Kitsap Counties. Hood Canal, a natural, glacier-carved fjord more than 60 miles long, forms the westernmost waterway and margin of the Puget Sound basin.

It begins in the north in Admiralty Inlet between Tala Point and Foulweather Bluff and extends southwesterly about 45 miles to the Great Bend at Annas Bay. From there its "hook" extends northeasterly 15 miles to its head at the Union River estuary near Belfair. Estuaries and lower river habitats are primary considerations in recovery of salmon in this region.

The draft Hood Canal summer chum recovery plan was completed in June 2005 and posted in the Federal Register in August 2006.

Key Facts

LISTED FISH

Hood Canal summer chum (threatened)
Bull trout (threatened)
Chinook(threatened)

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Degraded nearshore/marine and estuarine conditions and habitat loss
- Degraded riparian area and loss of in-river large woody debris
- Excessive sediment
- Degraded water quality and temperature
- Impaired instream flows

RECOVERY PLANNING STATUS

Draft Hood Canal summer chum recovery plan completed in June 2005 and posted in Federal Register August 2006.

REGIONAL RECOVERY ORGANIZATION

Hood Canal Coordinating Council

FEDERALLY RECOGNIZED TRIBES

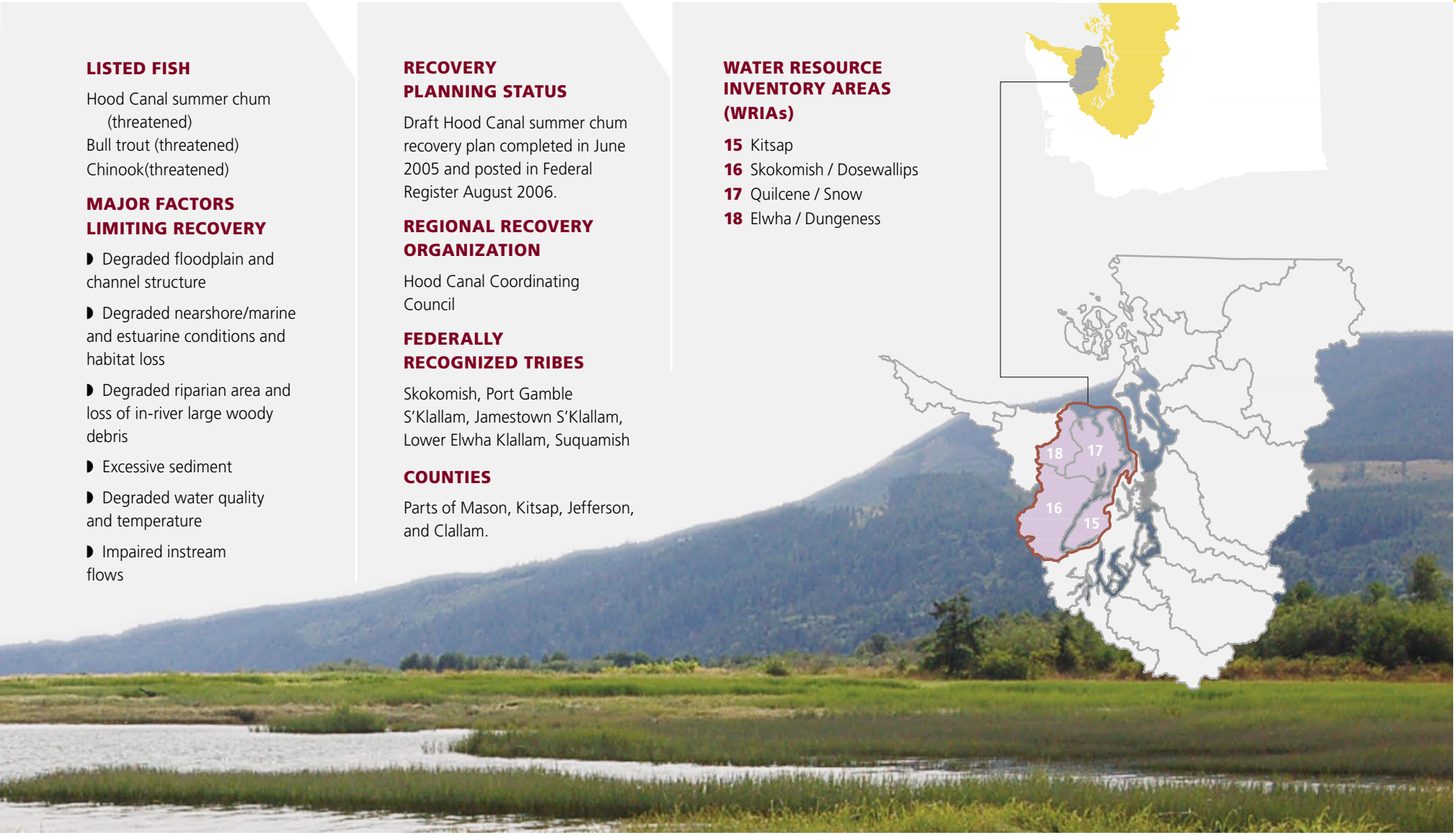
Skokomish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, Suquamish

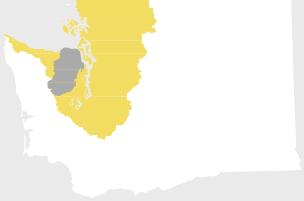
COUNTIES

Parts of Mason, Kitsap, Jefferson, and Clallam.

WATER RESOURCE INVENTORY AREAS (WRIAs)

15 Kitsap
16 Skokomish / Dosewallips
17 Quilcene / Snow
18 Elwha / Dungeness



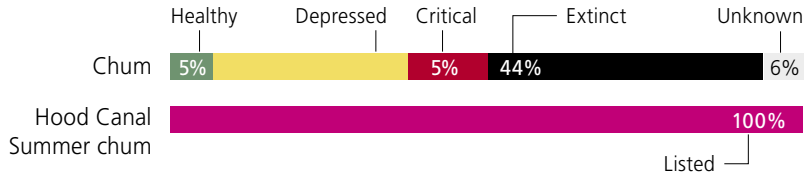


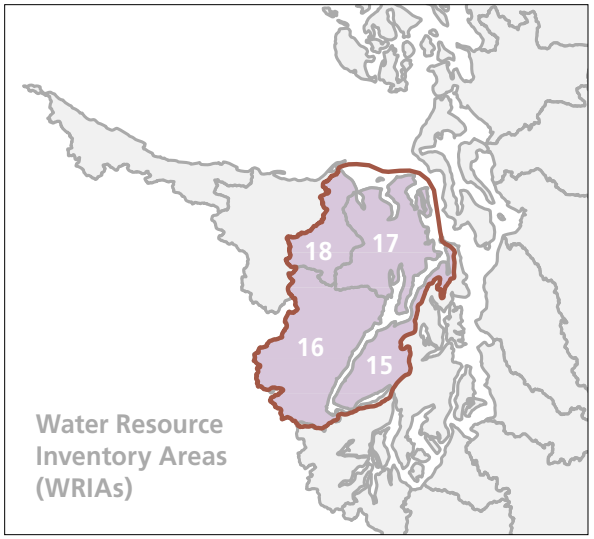
PUGET SOUND
SALMON RECOVERY
REGION
HOOD CANAL

"Loki...changed himself into a salmon, and lay hid among the stones of the brook. But the gods took his net and dragged the brook, and Loki, finding he must be caught, tried to leap over the net; but Thor caught him by the tail and compressed it, so that salmons ever since have had that part remarkably fine and thin."

BULFINCH'S FABLES FROM A NORSE LEGEND

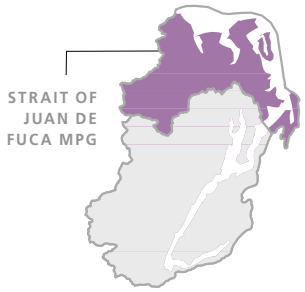
Fish Status





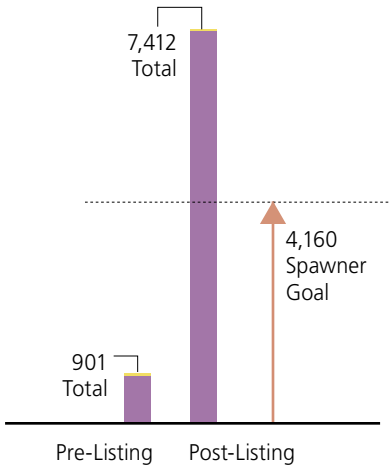
Note:
Coho, Chinook, pink, sockeye, steelhead, coastal cuttthroat, and bull trout charts can be found on Puget Sound Salmon Recovery Region pages (XX to XX).

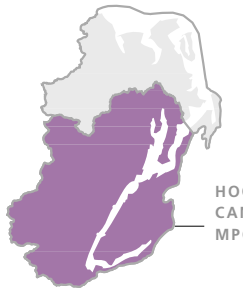
Juvenile production not available.



Hood Canal Summer Chum Adult Abundance Strait of Juan de Fuca MPG

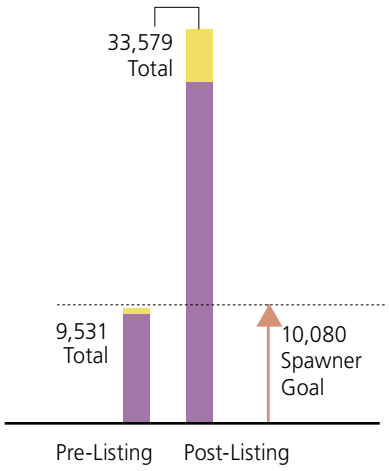
ANNUAL AVERAGE

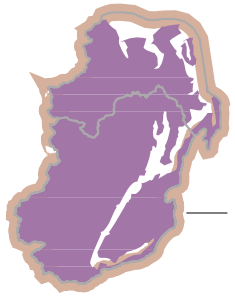




Hood Canal Summer Chum Adult Abundance Hood Canal MPG

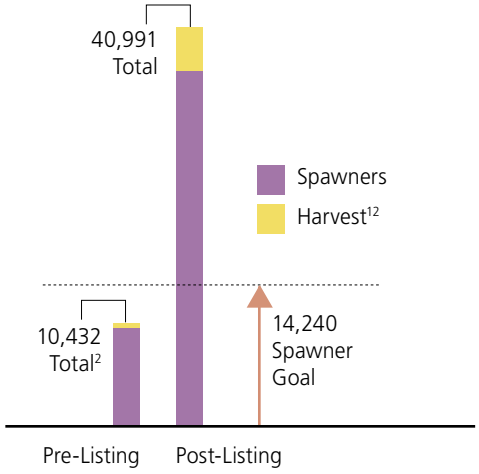
ANNUAL AVERAGE

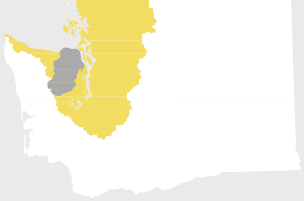




Hood Canal Summer Chum Adult Abundance[11] ESU Scale

ANNUAL AVERAGE





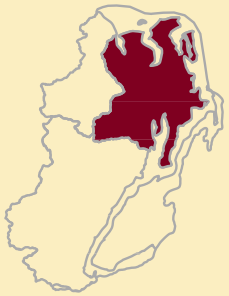
PUGET SOUND SALMON RECOVERY REGION
HOOD CANAL

QUILCENE BASIN

WRIA
17

WATER RESOURCE INVENTORY AREA

Watershed Watch
Quilcene Basin WRIA 17



The Quilcene-Snow watershed covers more than 401,000 acres (626 square miles) of the northeastern Olympic Peninsula, in Jefferson and Clallam Counties. About 27,000 people live in the watershed, and population density is relatively low, with Port Townsend and Port Ludlow the main population centers. WRIA 17 extends from the northeast flank of the Olympic Mountains to Hood Canal and the Strait of Juan de Fuca. The watershed includes direct drainages to Puget Sound from Jimmycomelately Creek in the northwest to the Big Quilcene River in the south. More than 70% of the watershed is privately owned, while federal and state lands cover the remaining area. Slightly over half of the watershed is zoned forestry or agriculture. Estuarine and lower river (1-2 miles) areas are considered most important for salmon recovery.

The recovery plan uses impervious surfaces as an indicator of future development and pressure on natural systems; it estimates that along major river corridors, from 4.2% to 8.7% is currently developed. This number is projected to increase up to almost 12% in some areas.

AERIAL PHOTOGRAPHY COURTESY OF DNR RESOURCE MAPPING

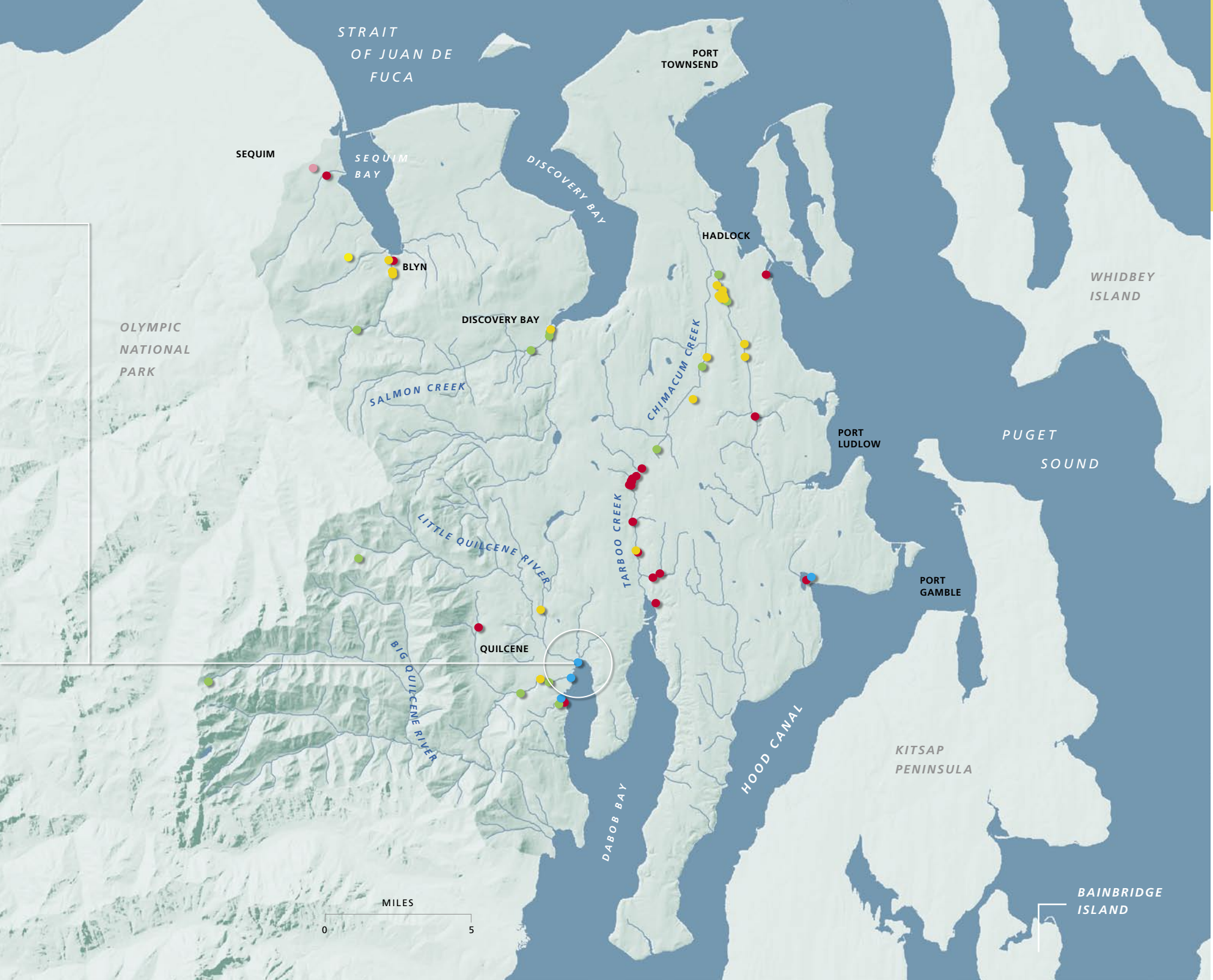
▲ **Quilcene Bay Estuary Restoration.**

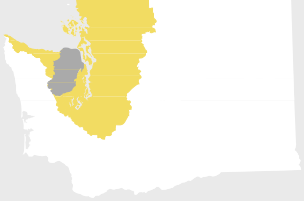
Donovan Creek Tidal Wetlands Restoration

SALMON RECOVERY FUNDING BOARD

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous


STRAIT OF JUAN DE FUCA
PORT TOWNSEND
SEQUIM
SEQUIM BAY
DISCOVERY BAY
HADLOCK
BLYN
WHIDBEY ISLAND
OLYMPIC NATIONAL PARK
DISCOVERY BAY
SALMON CREEK
CHIMACUM CREEK
PORT LUDLOW
PUGET SOUND
LITTLE QUILCENE RIVER
TARBOO CREEK
PORT GAMBLE
QUILCENE
BIG QUILCENE RIVER
HOOD CANAL
KITSAP PENINSULA
DABOB BAY
BAINBRIDGE ISLAND
MILES
0
5



PUGET SOUND SALMON RECOVERY REGION
HOOD CANAL

QUILCENE BASIN

WRIA
17

WATER RESOURCE INVENTORY AREA

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
Upstream passage goals at FERC licensed facilities	Port Townsend Mill: **Unknown** Overall: **Unknown**
Actual upstream passage achieved (any or all years for which data are available 1999-2006)	Port Townsend Mill: **Unknown** Overall: **Unknown**
Downstream passage goals at FERC licensed facilities	Port Townsend Mill: **Unknown** Overall: **Unknown**
Actual downstream passage achieved (any or all years for which data are available 1999-2006)	Port Townsend Mill: **Unknown** Overall: **Unknown**

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete barriers: 88 Partial barriers: 70
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results
Run size achieved, 5 year average pre- and post listing. Wild component of Hood Canal Major Population Group.	Pre-listing: 9,351 Post-listing: 33,580
Juvenile production (baseline mean)	No data collected

Is water clean enough to support wild salmon?

Indicator	Measured Results
Water quality index parameters	Fecal coliform: 121 / 7 Dissolved oxygen: 6 / 2 pH: 11 Temperature: 23 / 20

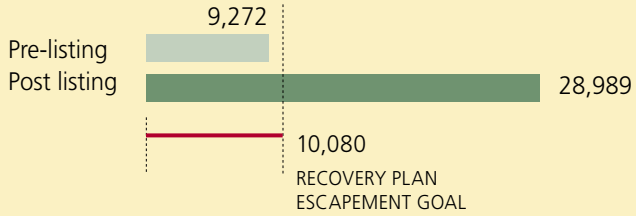
Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flow set	Rule under negotiation
Percent of time flow met during fish critical period **August 1 to September 30**	Not applicable at this time.

Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing (Hood Canal MPG scale)	
Percent of wild salmon run that is harvested, 5 year average pre- and post listing (Hood Canal MPG scale)	Pre-Listing 5% Post listing 14%

Do hatchery practices meet the needs of wild salmon?

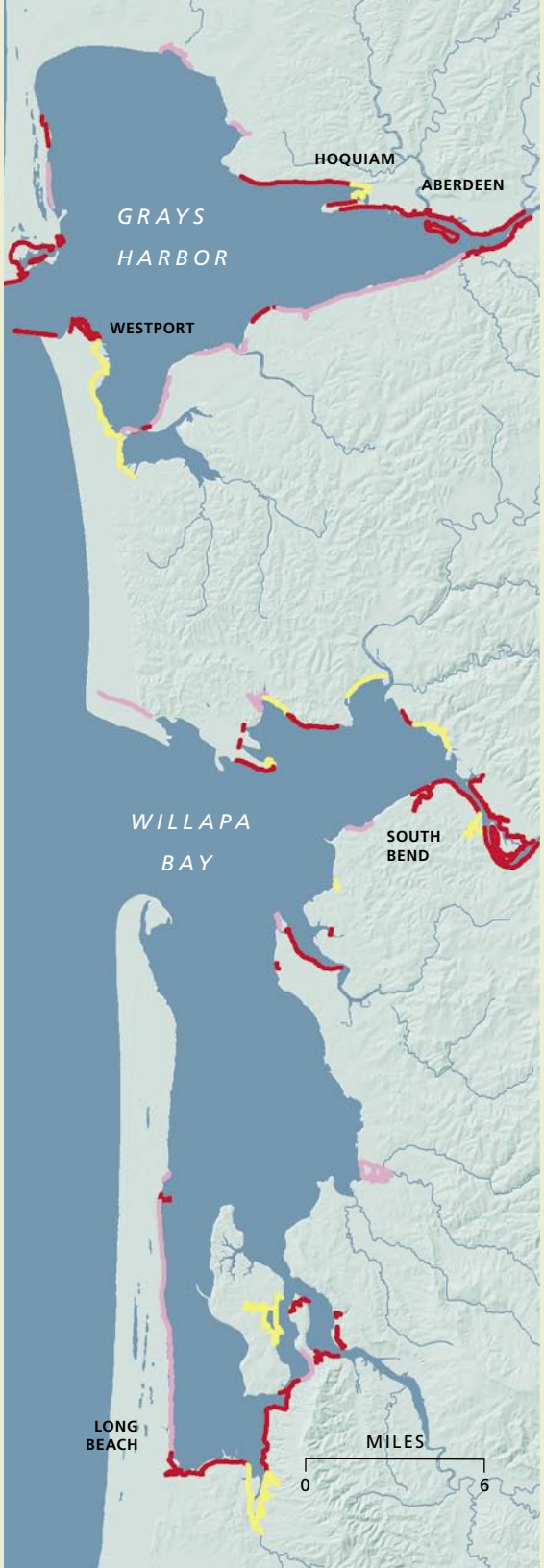
Indicator	Measured Results
Scientific evaluation of practices?	N/A. No WDFW hatchery in watershed. However, WDFW supplementation program accounts for an average 25% of run.

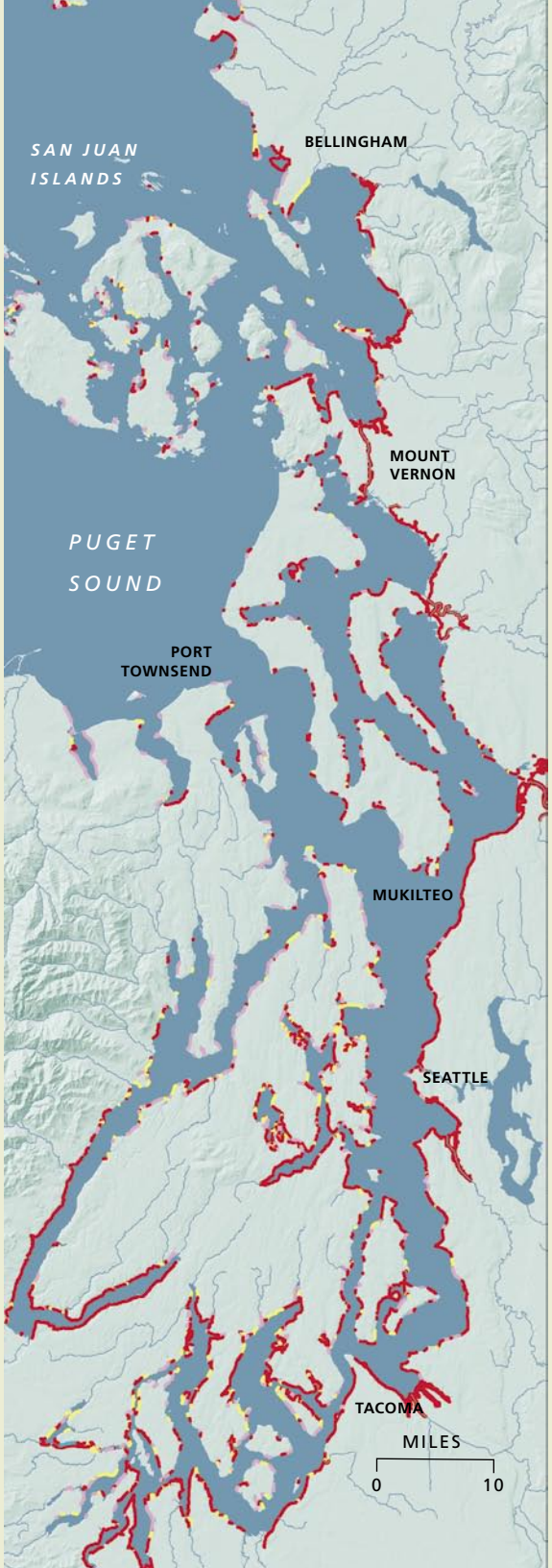
Shoreline Modification

- 10-30% Modified
- 40-60% Modified
- 70-100% Modified

DATA SOURCE: DEPARTMENT OF NATURAL RESOURCES, PUGET SOUND AMBIENT MONITORING PROGRAM.

▶ All juvenile salmon move along the shallows of estuaries and nearshore areas during their migration to the sea, and may be found in these habitats throughout the year.





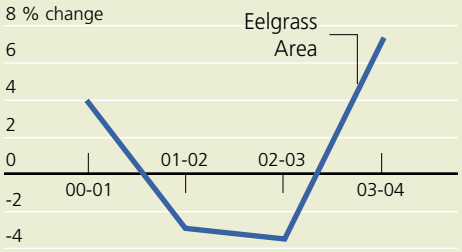
HUGH SHIPMAN, WASHINGTON DEPARTMENT OF ECOLOGY

- Changes in the shorelines, which are particularly prevalent in the most populated areas of Washington, simplify and reduce interdital habitat areas. These modifications affect migration corridors, transition of the fish from fresh to salt water, their eating habitat, and their ability to forage and seek refuge from predators.

Eelgrass Concentrations

- Continuos Concentration
- Patchy Concentration

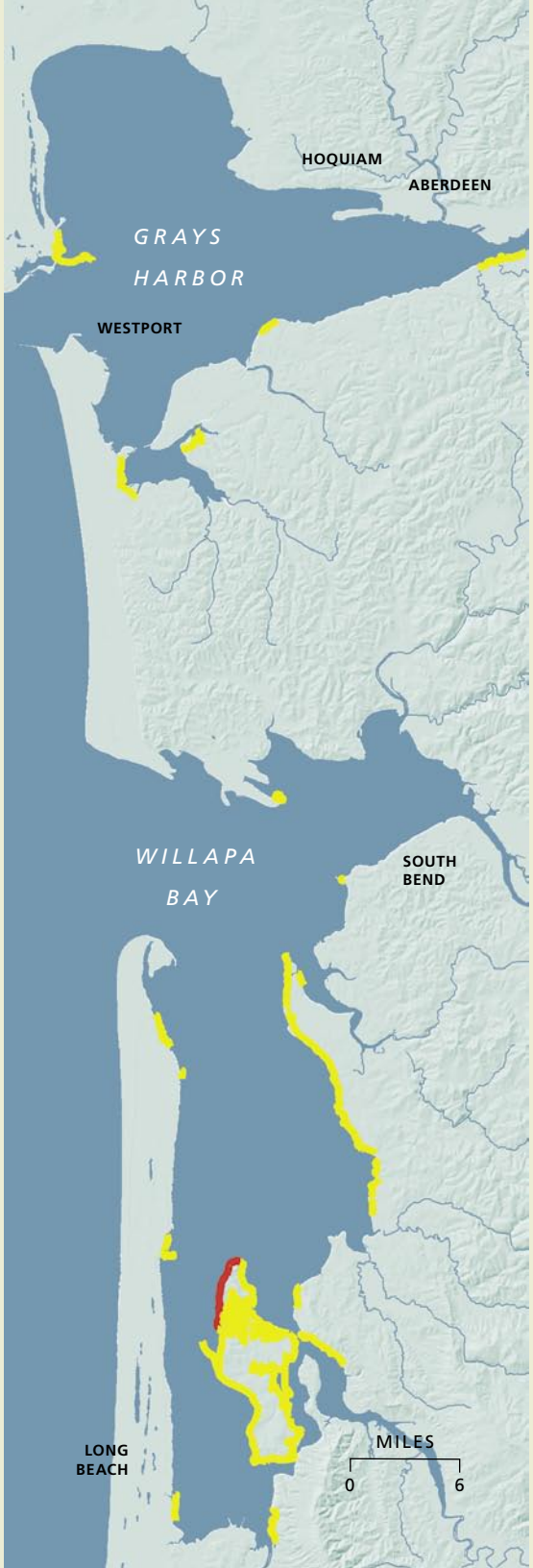
PUGET SOUND ANNUAL CHANGE IN EELGRASS AREA

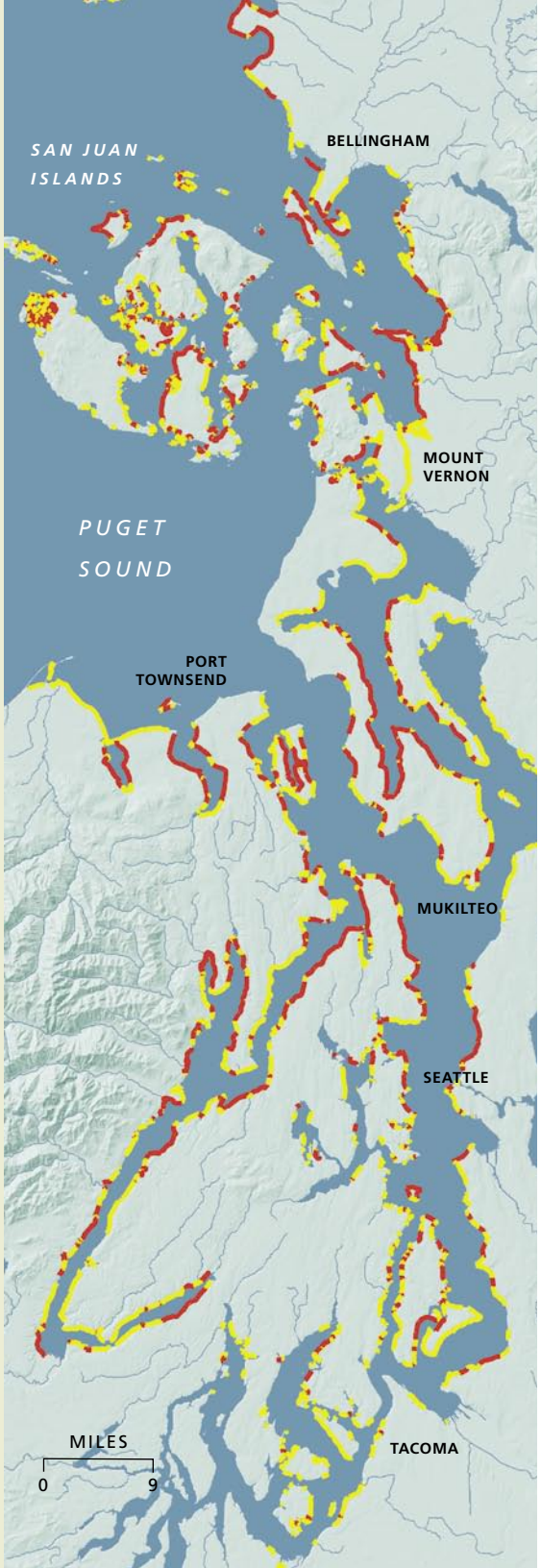


GRAYS HARBOR AND WILLAPA BAY: NO DATA AVAILABLE ON EELGRASS ANNUAL CHANGE.

DATA SOURCE: DEPARTMENT OF NATURAL RESOURCES, PUGET SOUND AMBIENT MONITORING PROGRAM.

▶ Eelgrass is considered one of the most important components of nearshore marine environments for salmon. Damage to eelgrass affects whole populations of fish, as well as the stability of our shorelines

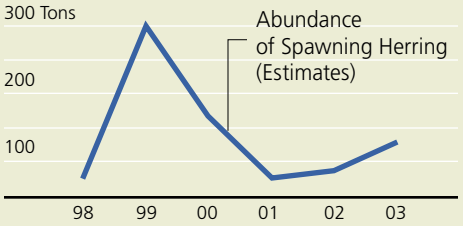




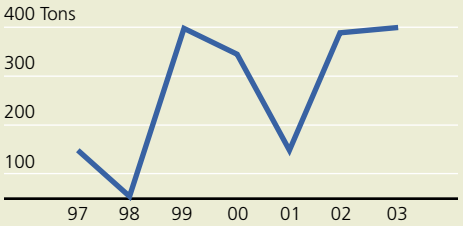
Herring Spawning Areas

Herring Spawning Areas

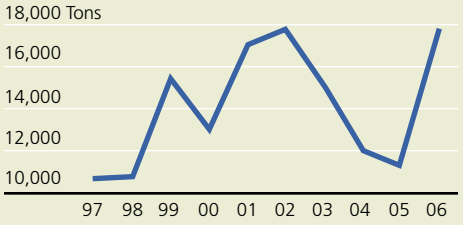
GRAYS HARBOR



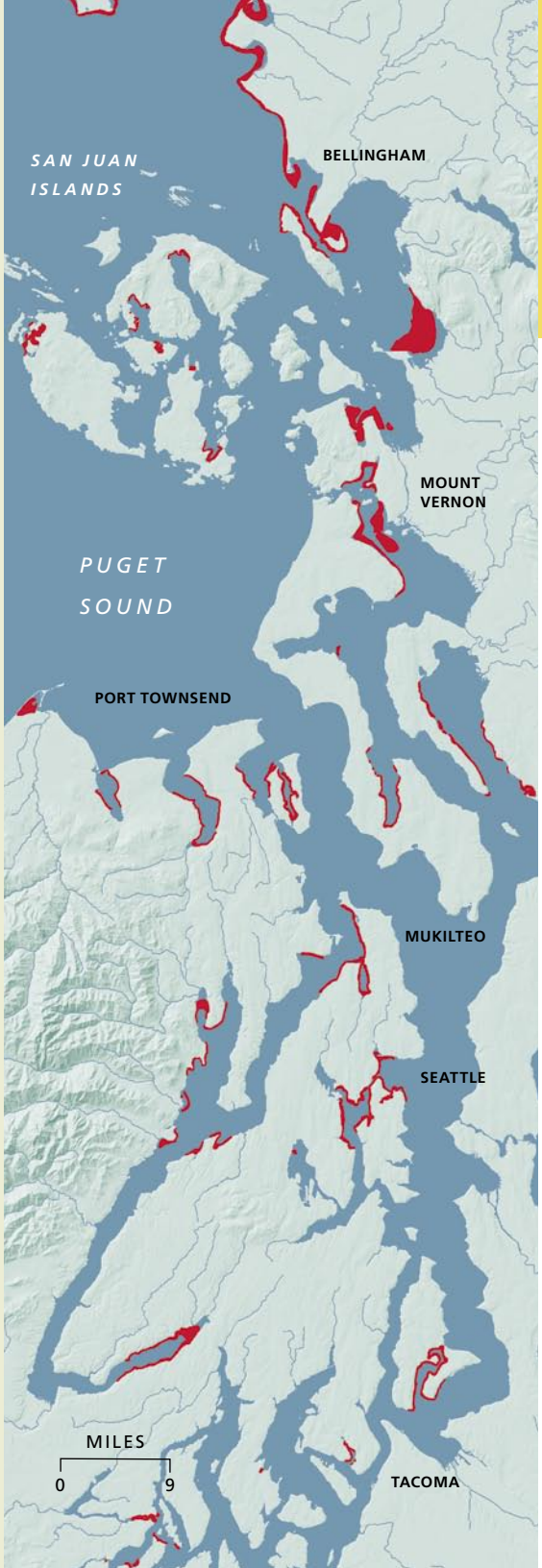
WILLAPA BAY



PUGET SOUND



DATA SOURCE: DEPARTMENT OF FISH AND WILDLIFE.



Washington Coastal Salmon Recovery Region

PHOTOS BY CHRIS DRIVDAHL

The Washington Coastal Salmon Recovery Region includes all Washington river basins flowing directly into the Pacific Ocean from Cape Flattery to Cape Disappointment. The watersheds in the region are heavily forested, lightly populated except for parts of the Chehalis River Basin, and have economies that rely upon timber, agriculture and recreational activities. ESA listings in the region include Lake Ozette sockeye, for which a recovery plan is expected by Spring 2007, and bull trout.

No regional salmon recovery organization currently exists, but a process initiated within the region is underway to consider which salmon recovery activities should be locally coordinated across the Coastal Region.

Key Facts

LISTED FISH

Bull trout (threatened)
Lake Ozette Sockeye (threatened).

RECOVERY PLANNING STATUS

Federal bull trout draft recovery plan; 5-year status review under way. Draft Lake Ozette Sockeye recovery plan in progress.

REGIONAL RECOVERY ORGANIZATION

A regional recovery organization has not formed, but discussions are under way regarding coordination across watersheds for recovery planning.

FEDERALLY RECOGNIZED TRIBES

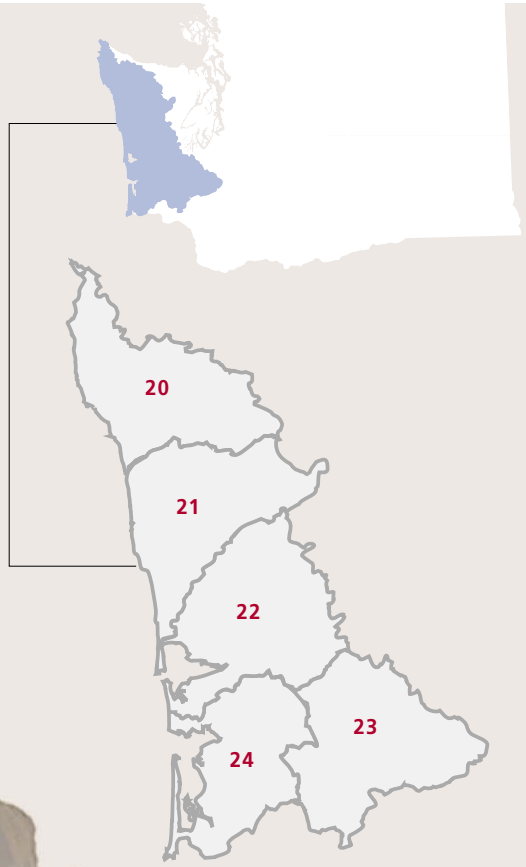
Makah, Hoh, Quileute, Quinault, Chehalis, Shoalwater Bay, Lower Elwha S'Klallam.

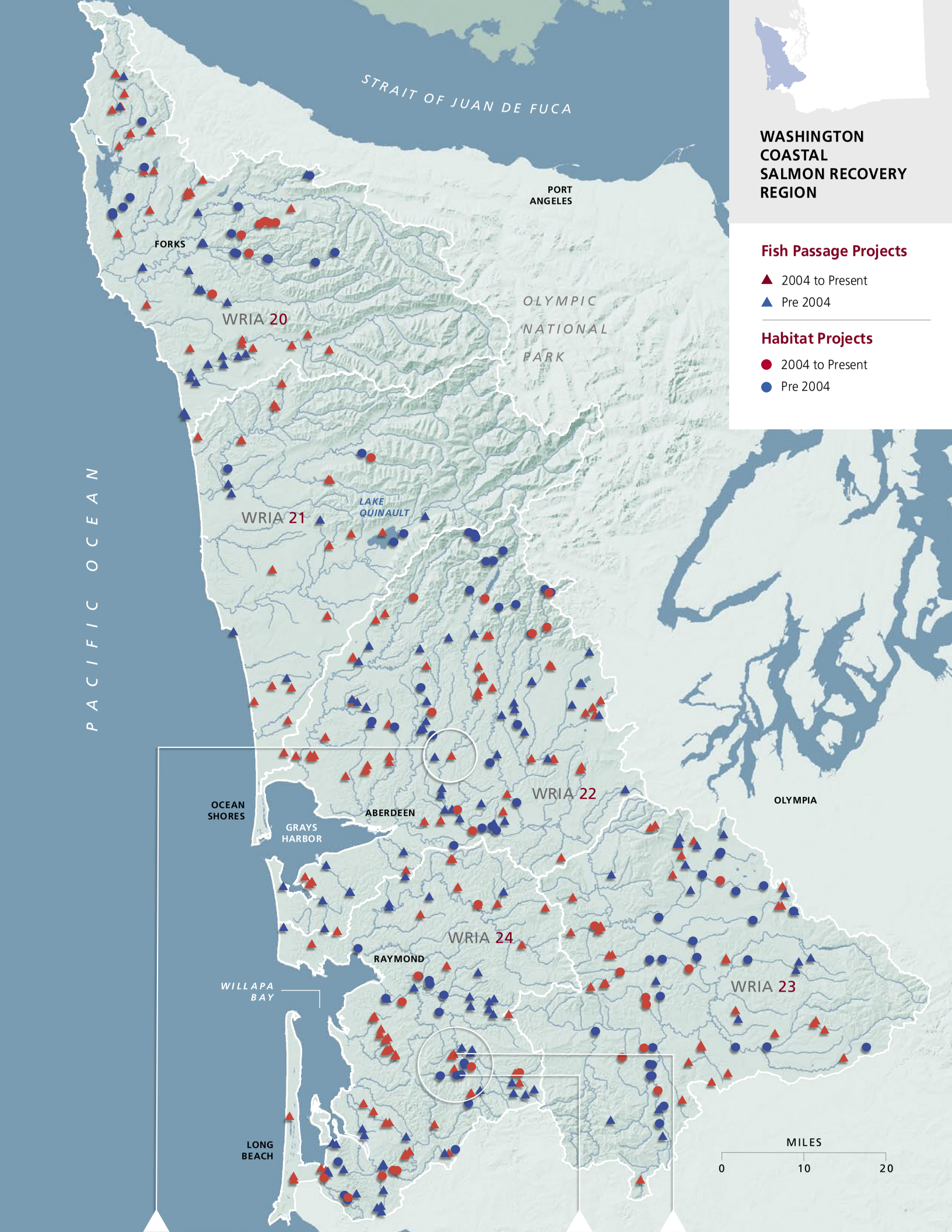
COUNTIES

Grays Harbor, and portions of Clallam, Jefferson, Lewis, Mason, Pacific, and Thurston.

WATER RESOURCE INVENTORY AREAS (WRIAs)

20 Soleduc
21 Queets / Quinault
22 Lower Chehalis
23 Upper Chehalis
24 Willapa




WASHINGTON COASTAL SALMON RECOVERY REGION
Fish Passage Projects
2004 to Present
Pre 2004
Habitat Projects
2004 to Present
Pre 2004
STRAIT OF JUAN DE FUCA
PORT ANGELES
FORKS
WRIA 20
OLYMPIC NATIONAL PARK
WRIA 21
LAKE QUINAULT
PACIFIC OCEAN
OCEAN SHORES
GRAYS HARBOR
ABERDEEN
WRIA 22
OLYMPIA
WRIA 24
RAYMOND
WILLAPA BAY
WRIA 23
LONG BEACH
MILES
0
10
20

Barrier Correction on Wynoochee

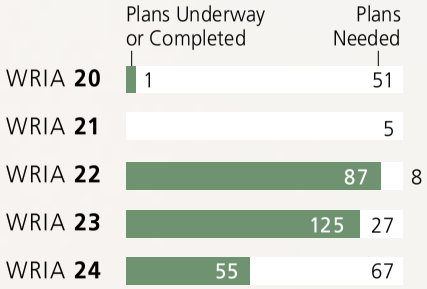
Instream Habitat Improvement on Mid-Trap Creek

Culvert Replacement on Oxbow Creek

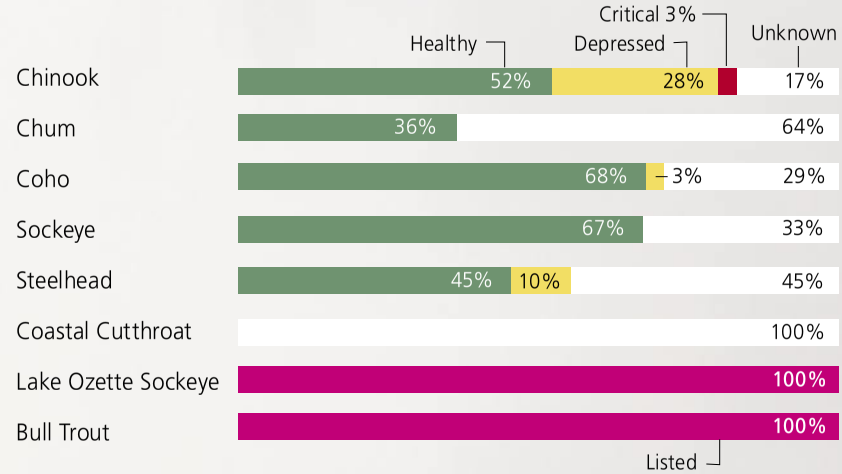
COAST PHOTO: CHRIS DRIVDAHL. PROJECTS PHOTOS: SALMON RECOVERY FUNDING BOARD

WATER RESOURCE INVENTORY AREAS (WRIAs)

Watershed Cleanup Plans



Fish Status



Lower Columbia Salmon Recovery Region

PHOTOS BY CHRIS DRIVDAHL

The Lower Columbia Salmon Recovery region is in Southwest Washington. It extends from the coast to the Columbia Gorge, and is mainly forest and rural in nature. Population centers are mainly along the Interstate-5 corridor and Columbia River. The 5,700 square mile planning area (the White Salmon basin was omitted at the request of Klickitat County) included in the recovery plan encompasses the entire Washington portion of the mainstem and estuary of the lower Columbia River as well as 18 major and a number of lesser tributary watersheds.

In all, the tributaries total more than 1,700 river miles. A draft recovery plan for Washington portions of Lower Columbia River chum, Chinook, steelhead, and coastal bull trout was completed in December 2004 and approved by the National Marine Fisheries Service as an interim regional recovery plan in February 2006. A supplement for coho, which were just listed in June 2006, will be completed in early 2007.

Key Facts

LISTED FISH

Chinook (threatened)
Chum (threatened)
Coho (threatened)
Steelhead (threatened)
Bull trout (threatened)

MAJOR FACTORS LIMITING RECOVERY

- Degraded floodplain and channel structure
- Degraded nearshore/marine and estuarine conditions and habitat loss
- Degraded riparian area and loss of in-river large woody debris
- Excessive sediment
- Degraded water quality and temperature
- Impaired instream flows
- Barriers to fish passage
- Hatchery impacts
- Harvest impacts
- Predator harassment of spawners

RECOVERY PLANNING STATUS

Draft recovery plan for Washington portion of lower Columbia Chinook, steelhead, chum, and bull trout, delivered to NOAA-Fisheries December 2004. Approved in February 2006. A supplement for coho will be completed in early 2007.

REGIONAL RECOVERY ORGANIZATION

Lower Columbia Fish Recovery Board.

FEDERALLY RECOGNIZED TRIBES

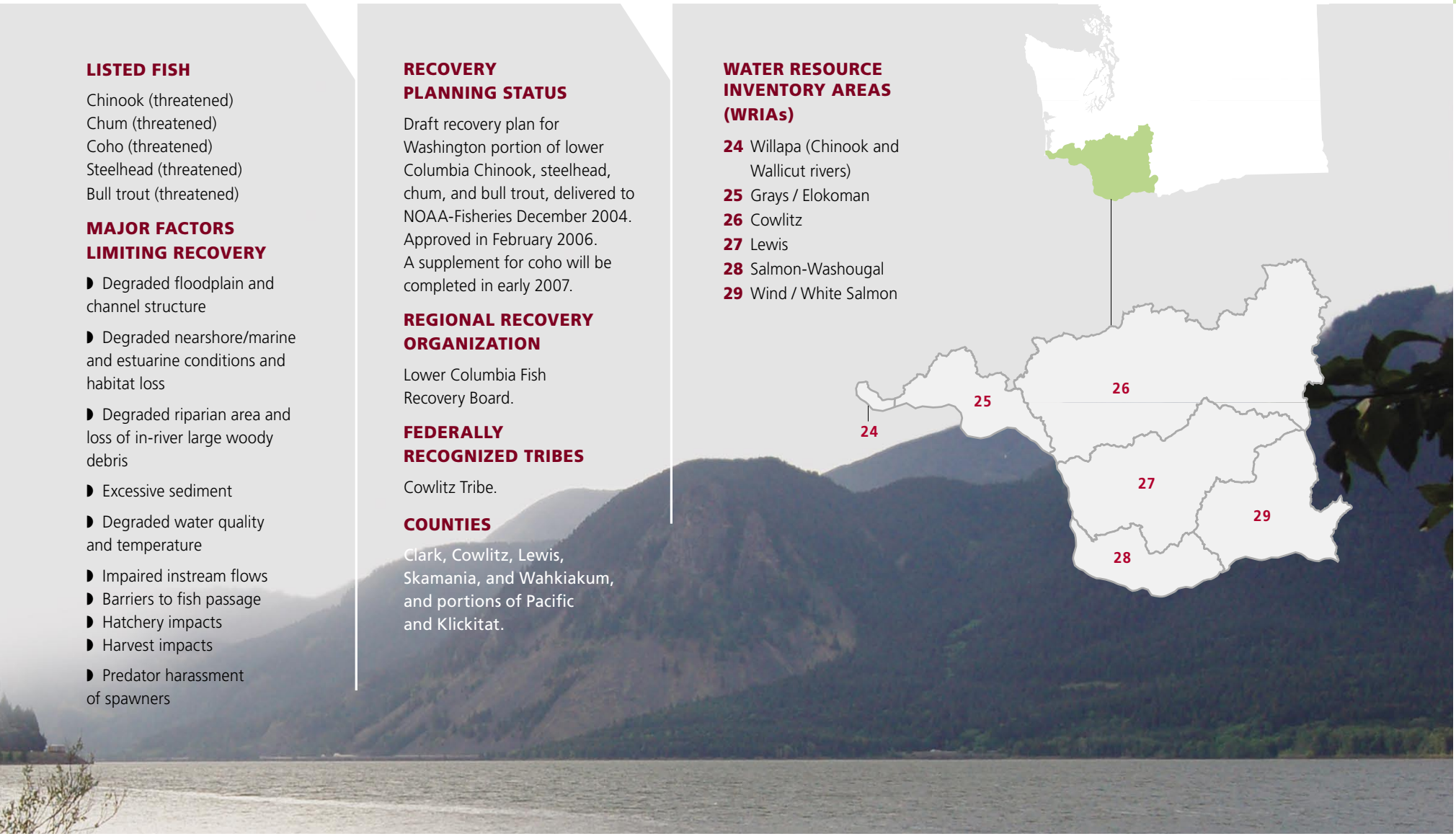
Cowlitz Tribe.

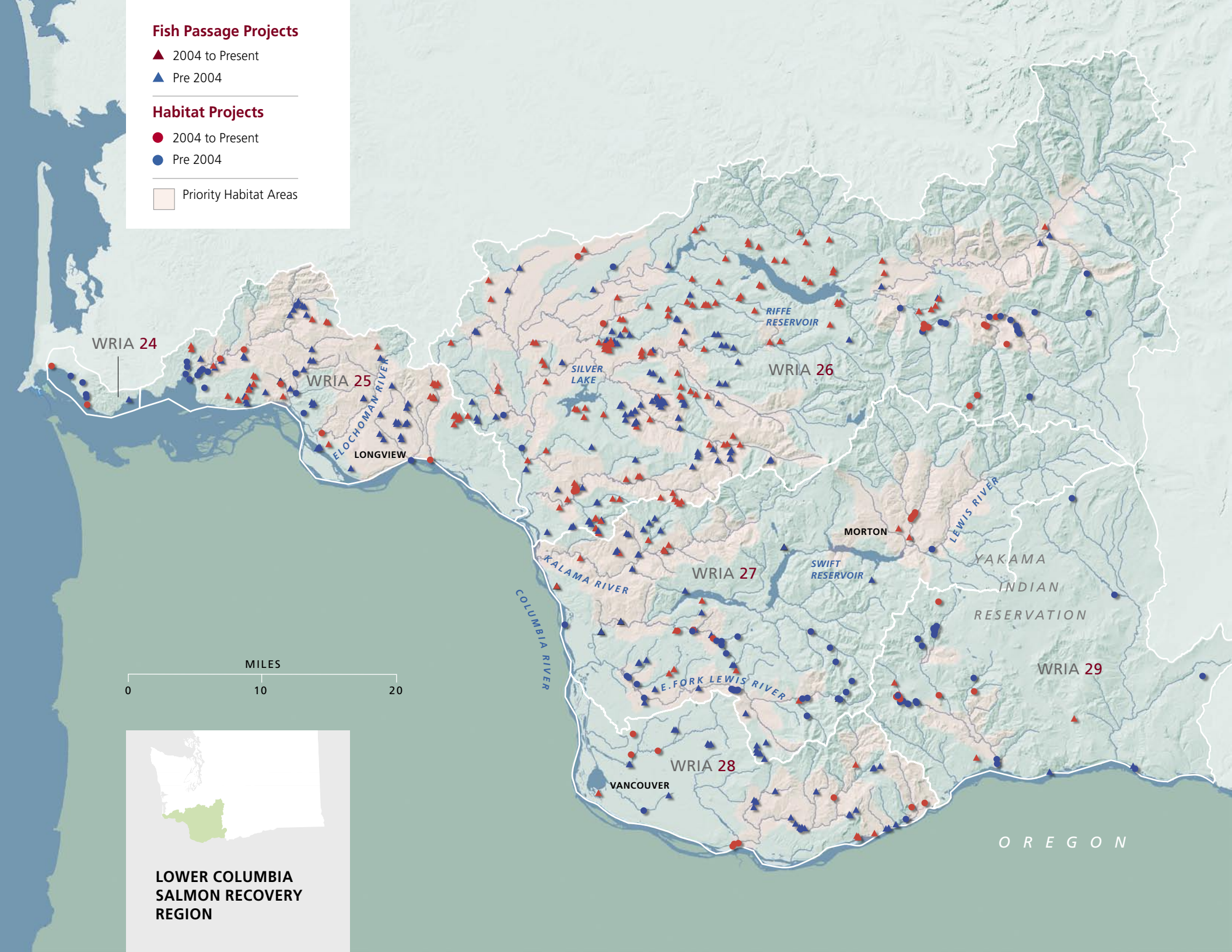
COUNTIES

Clark, Cowlitz, Lewis, Skamania, and Wahkiakum, and portions of Pacific and Klickitat.

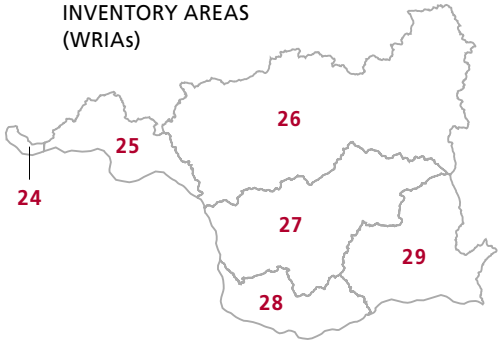
WATER RESOURCE INVENTORY AREAS (WRIAs)

24 Willapa (Chinook and Wallicut rivers)
25 Grays / Elokoman
26 Cowlitz
27 Lewis
28 Salmon-Washougal
29 Wind / White Salmon

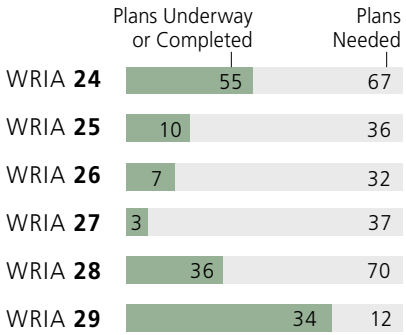



Fish Passage Projects
2004 to Present
Pre 2004
Habitat Projects
2004 to Present
Pre 2004
Priority Habitat Areas
WRIA 24
WRIA 25
WRIA 26
WRIA 27
WRIA 28
WRIA 29
ELOCHOMAN RIVER
LONGVIEW
SILVER LAKE
RIFFE RESERVOIR
KALAMA RIVER
COLUMBIA RIVER
MORTON
SWIFT RESERVOIR
LEWIS RIVER
YAKAMA INDIAN RESERVATION
E. FORK LEWIS RIVER
VANCOUVER
OREGON
MILES
0
10
20
LOWER COLUMBIA SALMON RECOVERY REGION

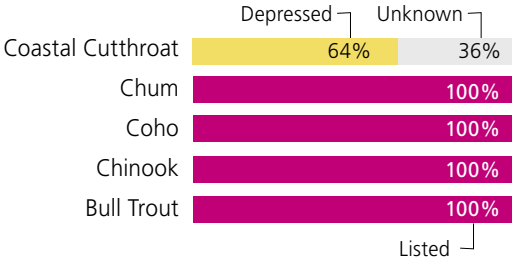
WATER RESOURCE INVENTORY AREAS (WRIAs)

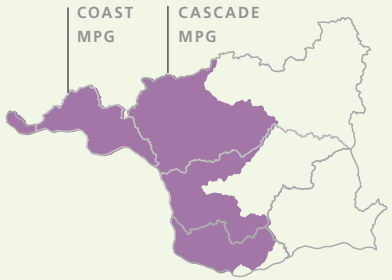


Watershed Cleanup Plans

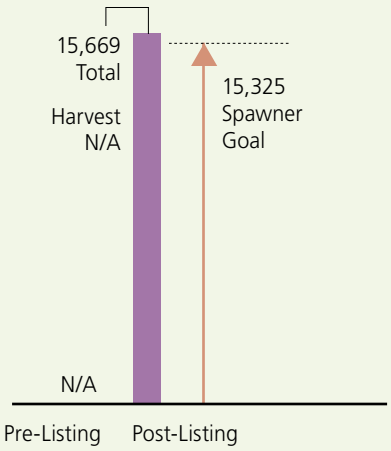


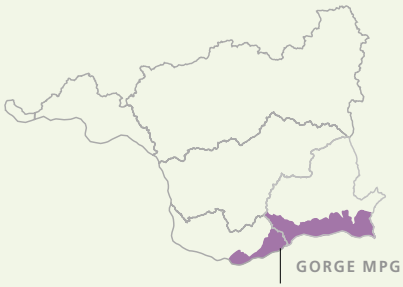
Fish Status



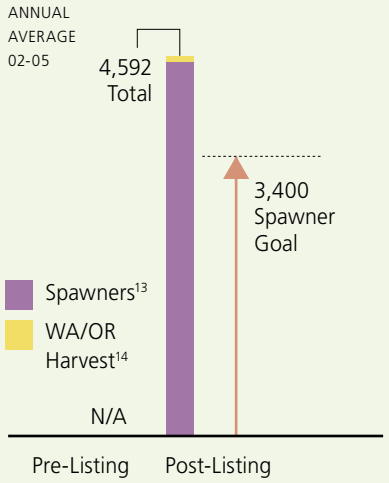


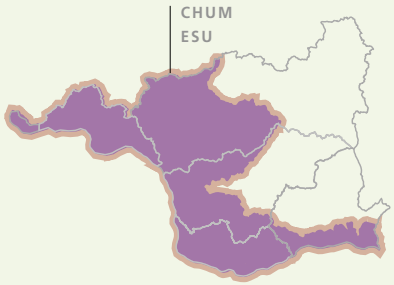
Chum Wild Adult Abundance Coast + Cascade MPG



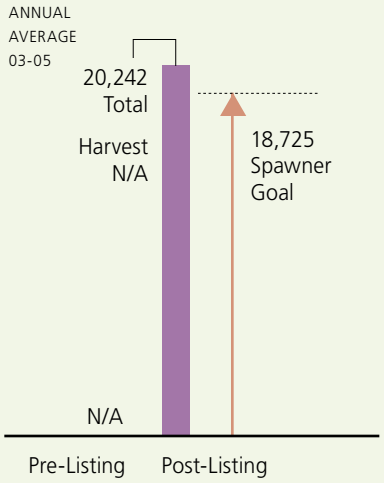


Chum Wild Adult Abundance Gorge MPG

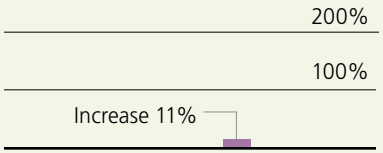


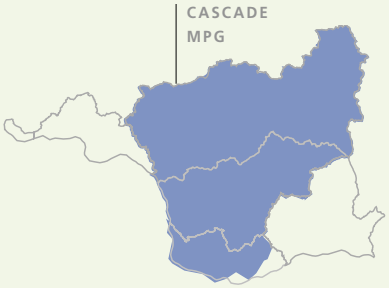


Chum Wild Adult Abundance[15] ESU Scale

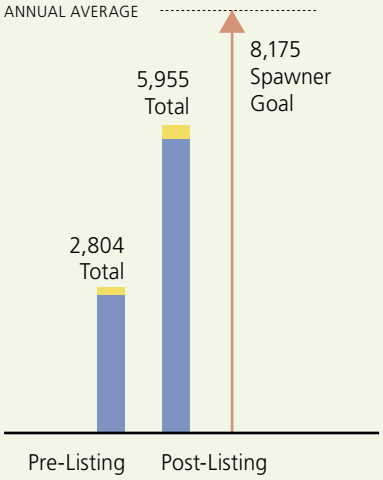


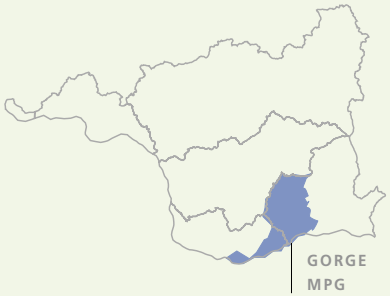
Chum Wild Juvenile Production[15] Since Listing



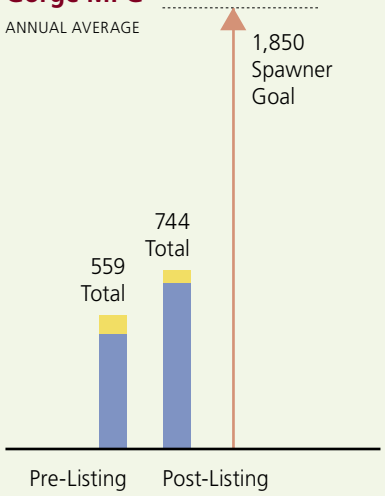


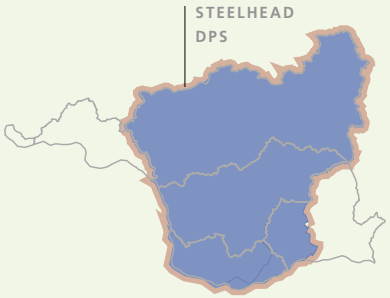
Steelhead Adult Abundance Cascade MPG



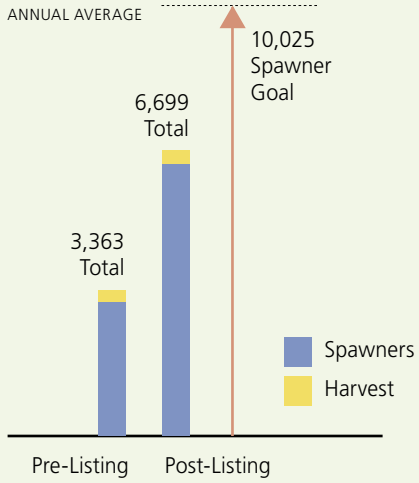


Steelhead Adult Abundance Gorge MPG

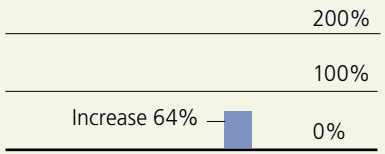


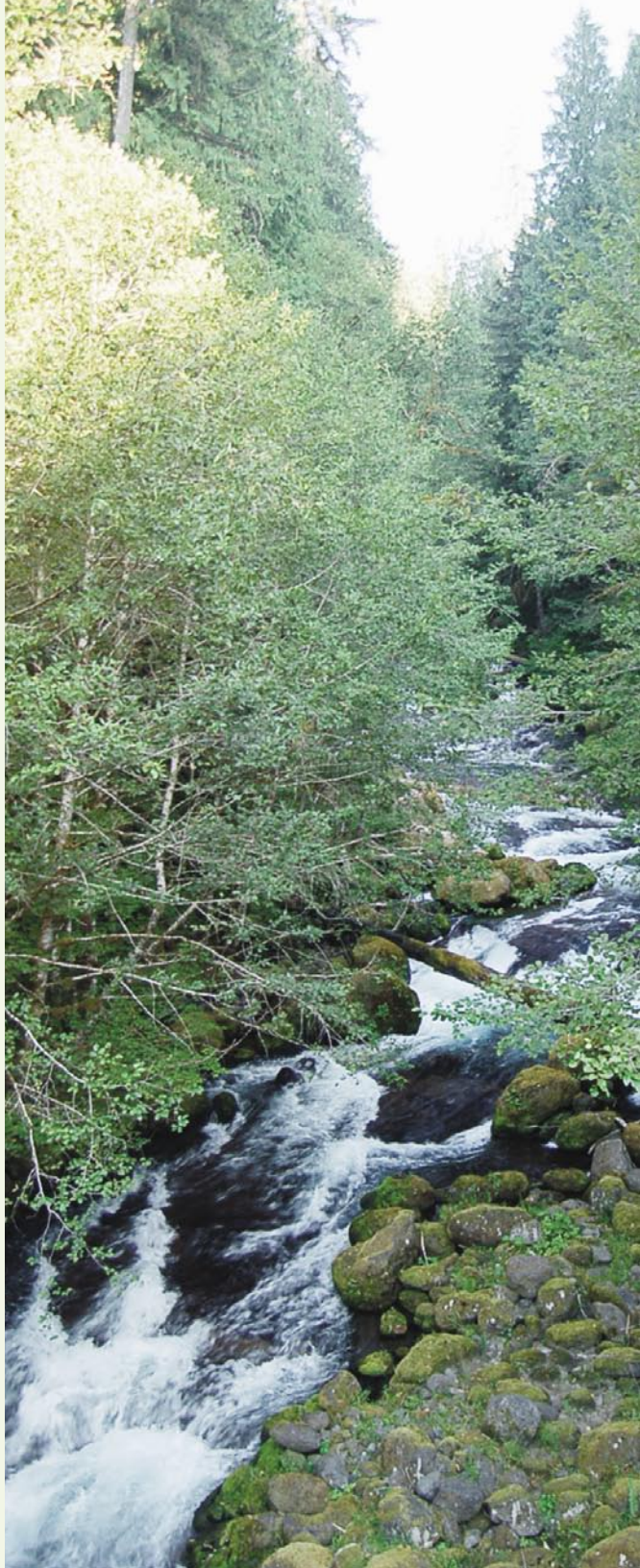


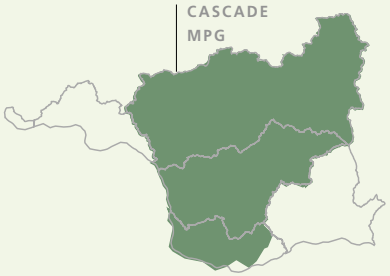
Steelhead Adult Abundance DPS Scale



Steelhead Juvenile Production[17] Since Listing

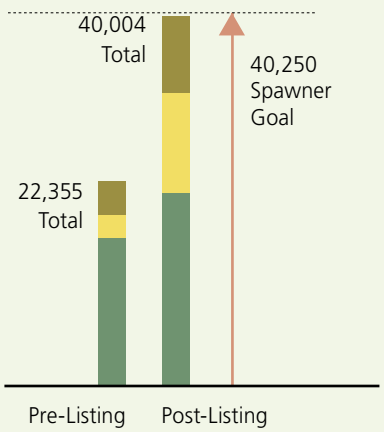






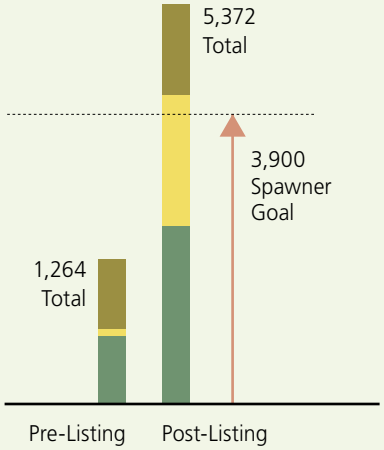
Chinook
Wild Adult Abundance
Cascade MPG

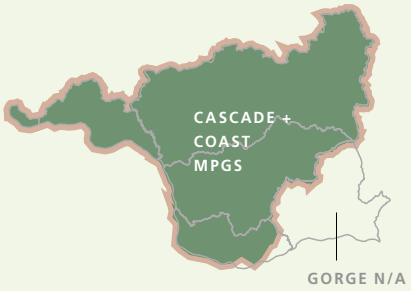
ANNUAL AVERAGE



Chinook
Wild Adult Abundance
Coast MPG

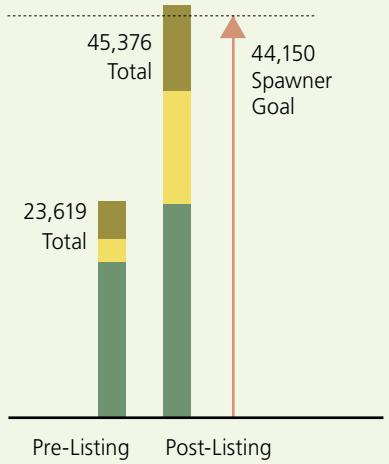
ANNUAL AVERAGE

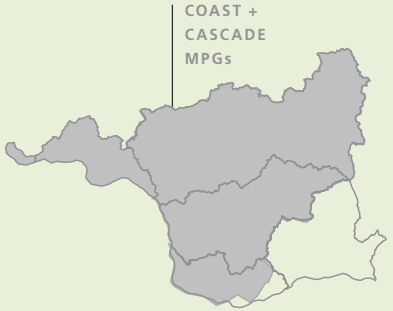




Chinook
Wild Adult Abundance
Cascade + Coast MPGs

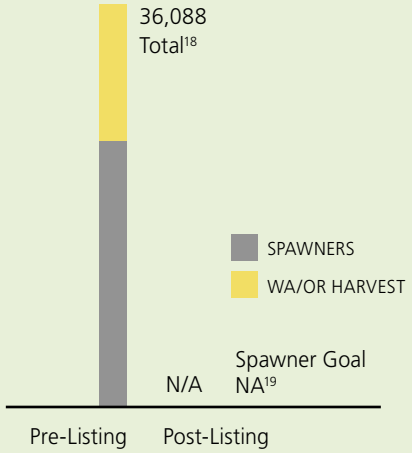
ANNUAL AVERAGE

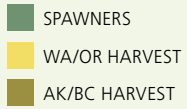




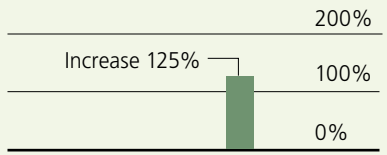
Coho
Wild Adult Abundance
Coast + Cascade MPGs

ANNUAL AVERAGE





Chinook
Wild Juvenile Production
Since Listing



Coho
Wild Juvenile Production
Since Listing

Data not available

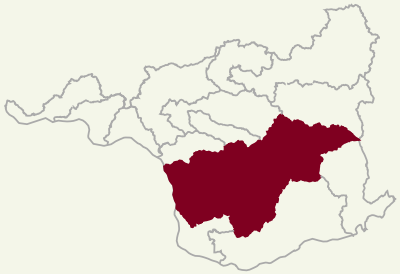
LOWER COLUMBIA SALMON RECOVERY REGION

LEWIS-KALAMA BASIN

WRIA
27

WATER RESOURCE INVENTORY AREA

Watershed Watch
Lewis-Kalama Basin WRIA 27

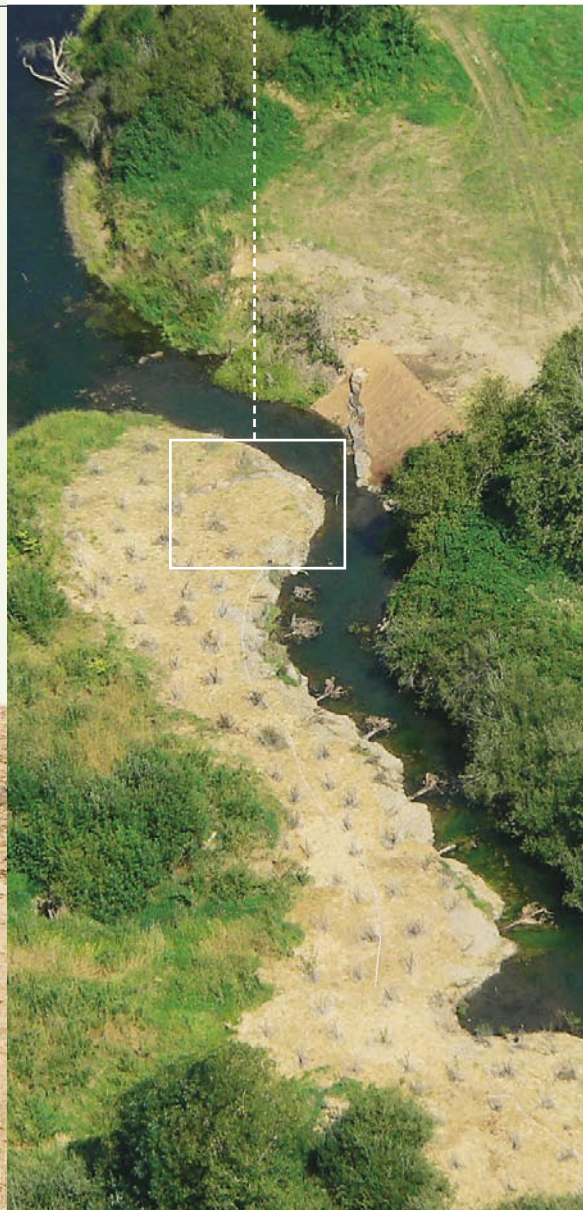


This area is located in southwest Washington in Skamania, Clark, and Cowlitz counties and includes three major rivers: the Kalama, North Fork Lewis, and East Fork Lewis. All rivers drain into the Columbia River. It covers 839,010 acres (1,311 square miles). Approximately 44% of the land is managed by the US Forest Service, while another 19% is managed by private and state timber owners.

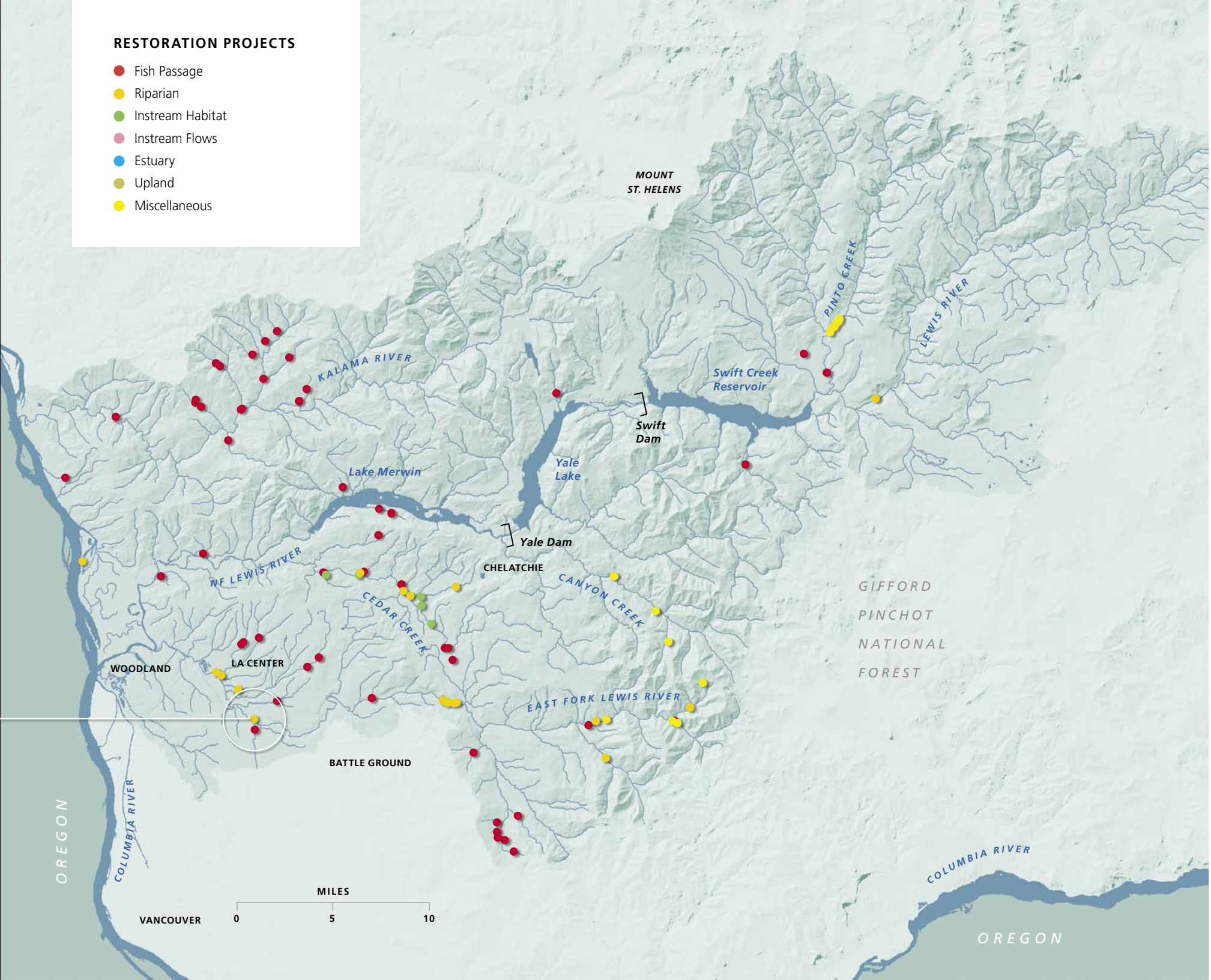
Clark County is the fastest growing part of the watershed, where population has tripled since 1960. Major impoundments exist on the North Fork Lewis (Swift, Yale, and Merwin Reservoirs). 14,300 live in North Fork Lewis River sub-basin, 5,300 live in the Kalama River sub-basin, and 24,400 reside in the East Fork Lewis River sub-basin where population is expected to more than double by 2020.

PHOTOS BY LOWER COLUMBIA FISH RECOVERY BOARD

Habitat Improvement on East Fork Lewis River



Below: Instream Habitat Improvement on Lockwood Creek


RESTORATION PROJECTS
Fish Passage
Riparian
Instream Habitat
Instream Flows
Estuary
Upland
Miscellaneous
MOUNT ST. HELENS
PINTO CREEK
LEWIS RIVER
KALAMA RIVER
Swift Creek Reservoir
Swift Dam
Yale Lake
Lake Merwin
Yale Dam
CHELATCHIE
NF LEWIS RIVER
CEDAR CREEK
CANYON CREEK
GIFFORD PINCHOT NATIONAL FOREST
WOODLAND
LA CENTER
EAST FORK LEWIS RIVER
BATTLE GROUND
COLUMBIA RIVER
OREGON
VANCOUVER
MILES
0
5
10
COLUMBIA RIVER
OREGON

LOWER COLUMBIA SALMON RECOVERY REGION

LEWIS-KALAMA BASIN

WRIA 27

WATER RESOURCE INVENTORY AREA

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
Upstream passage goals at FERC licensed facilities	Biggs Creek: **Unknown** Merwin, Swift 1, Swift 2, Yale: **Requirements in settlement agreement, license not issued**
Actual upstream passage achieved (any or all years for which data are available 1999-2006)	Biggs Creek: **Unknown** Merwin, Swift 1, Swift 2, Yale: **None**
Downstream passage goals at FERC licensed facilities	Biggs Creek: **Unknown** Merwin, Swift 1, Swift 2, Yale: **Requirements in settlement agreement, license not issued**
Actual downstream passage achieved (any or all years for which data are available 1999-2006)	Biggs Creek: **Unknown** Merwin, Swift 1, Swift 2, Yale: **None**

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete barriers: 55 Partial barriers: 97
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Run size achieved, 5 year average pre- and post listing. Wild component of Cascade Major Population Group.	Chinook	Pre-listing	22,355
		Post-listing	40,004
	Steelhead	Pre-listing	2,804
		Post-listing	5,955
	Coho	Data not available	
	Chum	Data not available	
Juvenile production (baseline mean, may be average of several sites)	Chinook: 77,604 Steelhead: 17,637 Coho: 68,282 Chum: 26,470		

Is water clean enough to support wild salmon?

Indicator	Measured Results
Water quality index parameters	Fecal coliform: 2 / 13 Dissolved oxygen: 11 pH: 13 Temperature: 30 / 17 Stream segments meeting standard Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flow set	Flow negotiations underway
Percent of time flow met during fish critical period **August 1 to September 30**	Not applicable.

Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing average (Cascade MPG scale)	**Steelhead** Pre-listing 2,666; Post-listing 5,668; 10,025 RECOVERY PLAN SPAWNER ESCAPEMENT GOAL **Chinook** Pre-listing 16,002; Post-listing 20,776; 44,950 RECOVERY PLAN SPAWNER ESCAPEMENT GOAL
Percent of wild salmon run that is harvested, 5 year average pre- and post listing (Cascade MPG scale)	**Steelhead** Pre-listing **5%**; Post-listing **5%** **Chinook** Pre-listing **28%**; Post-listing **48%** **Chum** Not available **Coho** Pre-listing **34%**; Post-listing **NA**

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does a scientific evaluation of practices exist?	Yes. Recovery plan recommendations and Hatchery Scientific Review Group review
If so, what actions have been accomplished?	14 Implemented; 1 Ongoing

Middle Columbia Salmon Recovery Region

PHOTOS BY CHRIS DRIVDAHL

The Middle Columbia Salmon Recovery Region is located in central Washington along the east slope of the Cascade Mountains. Public forests and farms dominate the forested, mountainous terrain and dry, shrub-steppe hills that cover most of the region. It includes the Columbia River and its tributaries entering from the west and north from the Yakima River to the Big White Salmon River.

The draft recovery plan was completed in June 2005 and posted in the Federal Register in May 2006. The plan covers Yakima River Basin portions of the Middle Columbia River steelhead listing, which includes the Columbia River Basin and tributaries upstream from the Wind River to and including the Yakima River and excluding the Snake River. The plan also addresses a bull trout "core" area in the Yakima Basin.

Key Facts

LISTED FISH

Steelhead (threatened)
Bull trout (threatened)

MAJOR FACTORS LIMITING RECOVERY

- Hydropower system mortality on Columbia River
- Impaired stream flows in tributaries
- Barriers to fish passage in tributaries
- Excessive sedimentation
- Degraded riparian habitat
- Degraded water quality and temperature
- Altered channel morphology

RECOVERY PLANNING STATUS

Draft recovery plan for Yakima basin portion of mid-Columbia steelhead and bull trout completed in June 2005 and posted in Federal Register in May 2006.

REGIONAL RECOVERY ORGANIZATION

Yakima Sub-basin Fish and Wildlife Planning Board.

FEDERALLY RECOGNIZED TRIBES

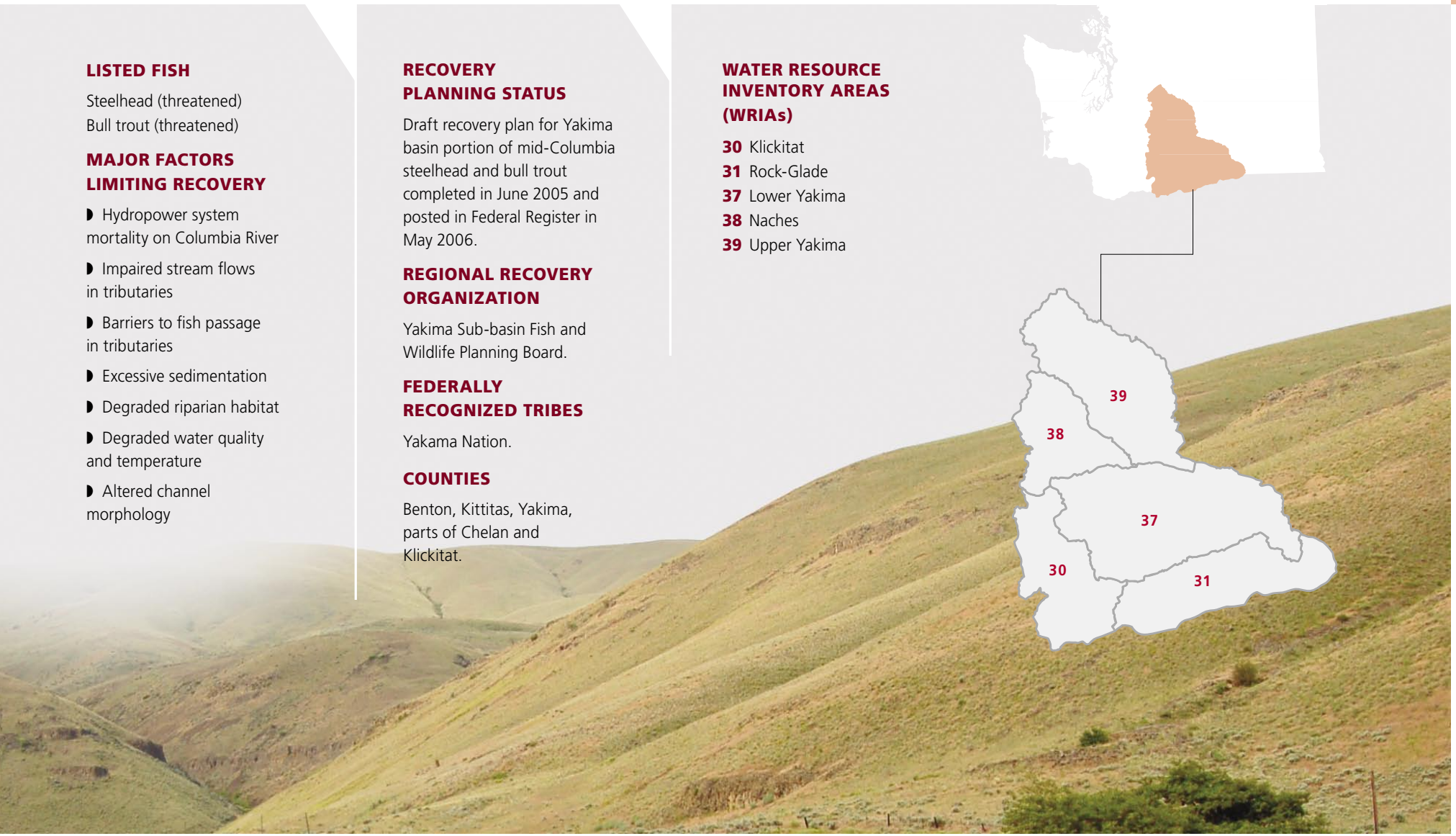
Yakama Nation.

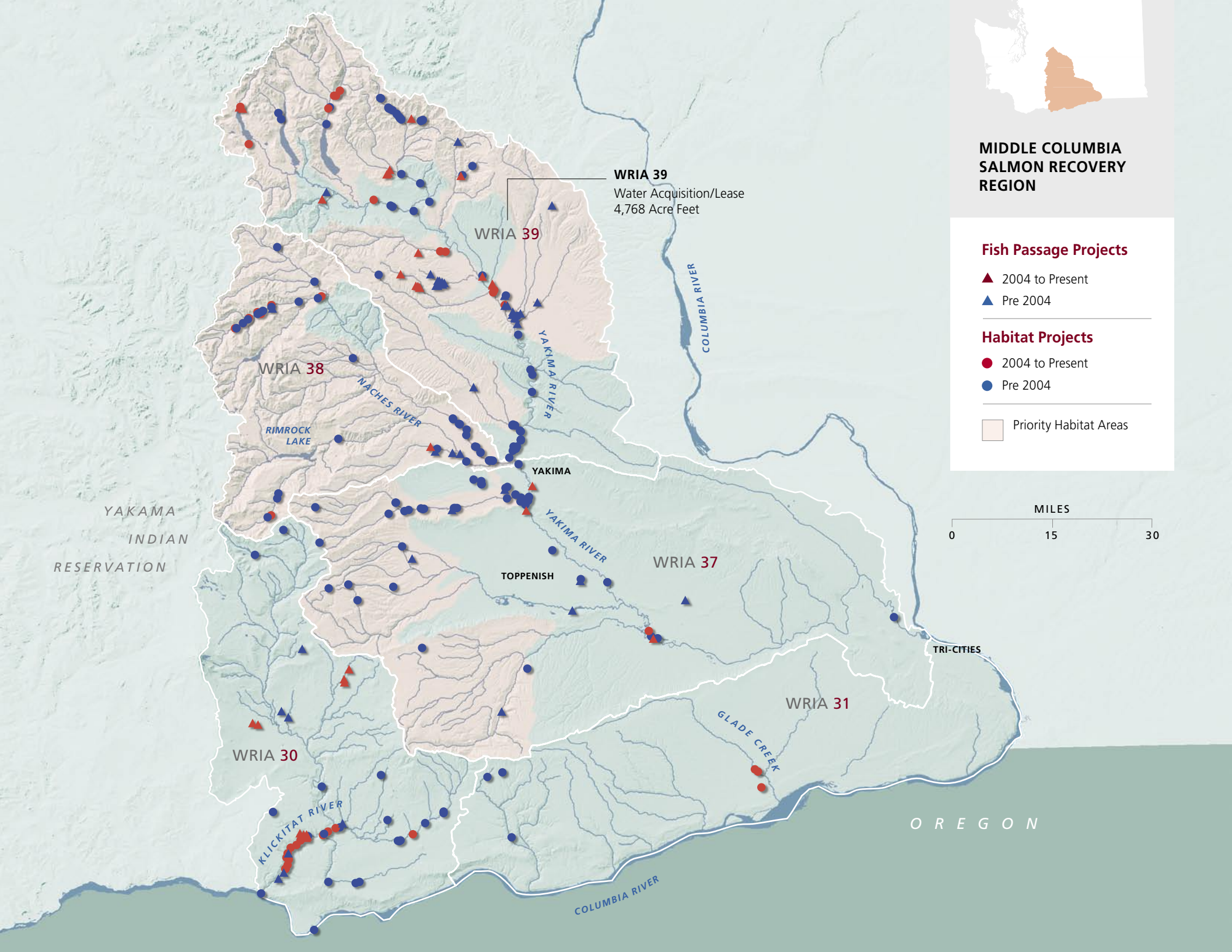
COUNTIES

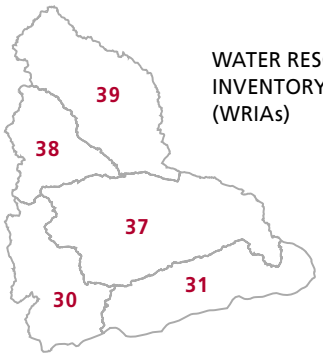
Benton, Kittitas, Yakima, parts of Chelan and Klickitat.

WATER RESOURCE INVENTORY AREAS (WRIAs)

30 Klickitat
31 Rock-Glade
37 Lower Yakima
38 Naches
39 Upper Yakima

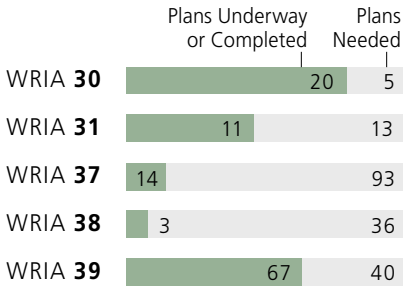



MIDDLE COLUMBIA SALMON RECOVERY REGION
WRIA 39
Water Acquisition/Lease
4,768 Acre Feet
Fish Passage Projects
2004 to Present
Pre 2004
Habitat Projects
2004 to Present
Pre 2004
Priority Habitat Areas
MILES
0
15
30
WRIA 39
WRIA 38
WRIA 37
WRIA 31
WRIA 30
YAKAMA INDIAN RESERVATION
YAKIMA
TOPPENISH
TRI-CITIES
RIMROCK LAKE
NACHES RIVER
YAKIMA RIVER
YAKIMA RIVER
COLUMBIA RIVER
GLADE CREEK
KLICKITAT RIVER
COLUMBIA RIVER
OREGON

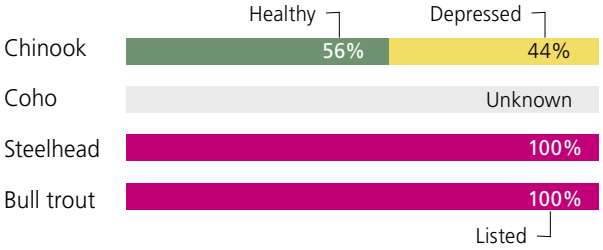


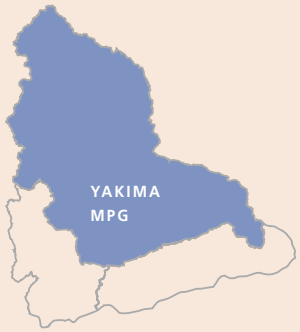
WATER RESOURCE INVENTORY AREAS (WRIAs)

Watershed Cleanup Plans

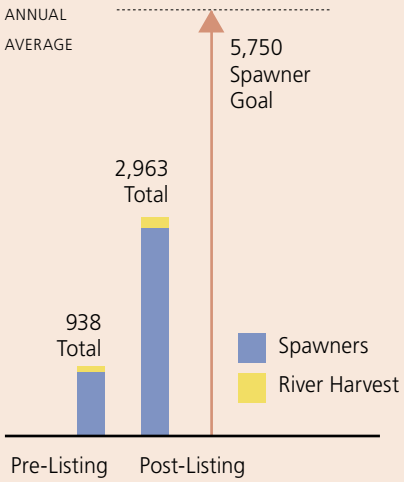


Fish Status

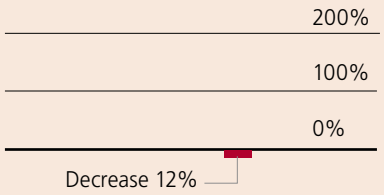


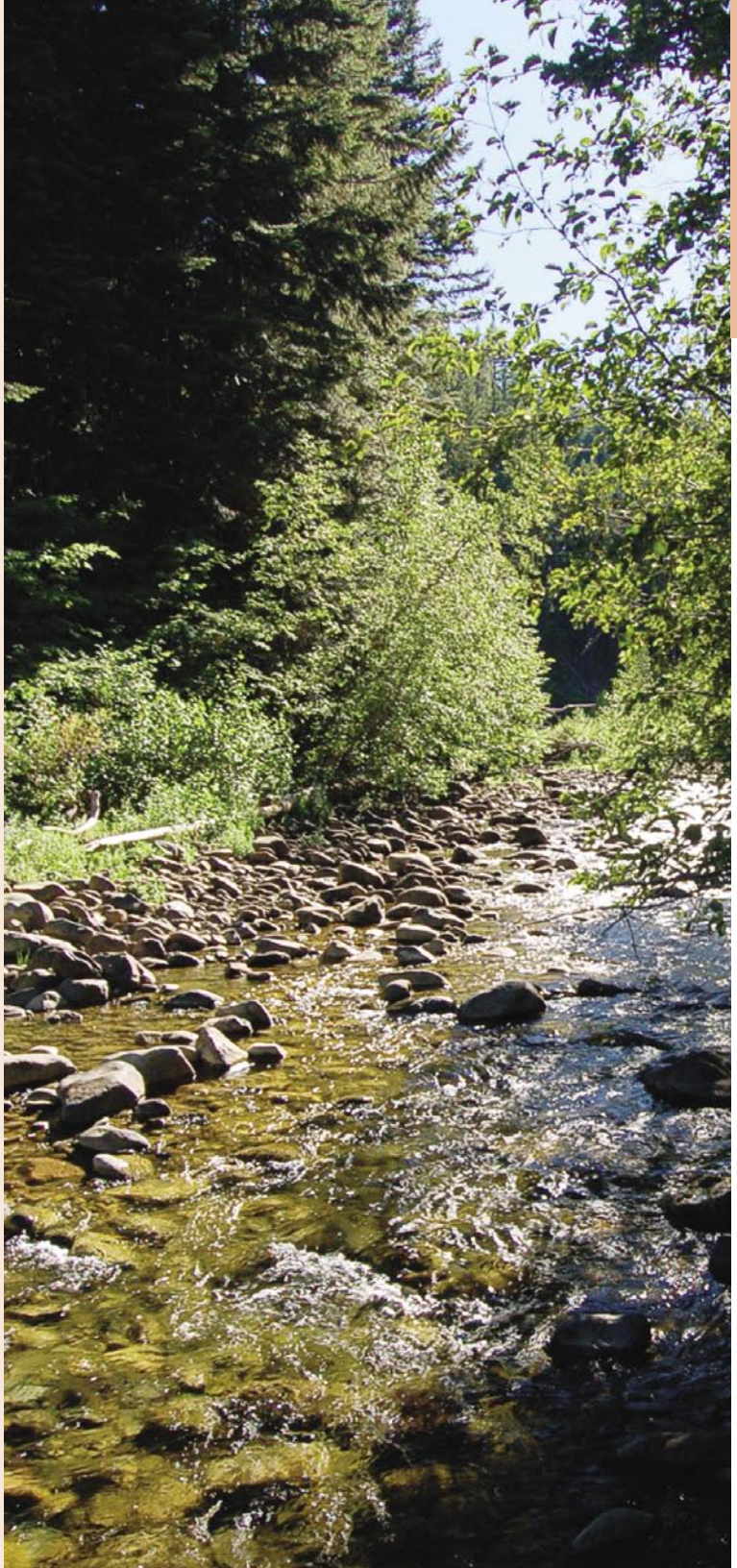


Steelhead Wild Adult Abundance[20] Yakima MPG



Steelhead Wild Juvenile Production[21] Since Listing





MIDDLE COLUMBIA SALMON RECOVERY REGION

UPPER YAKIMA BASIN

WRIA 39

WATER RESOURCE INVENTORY AREA

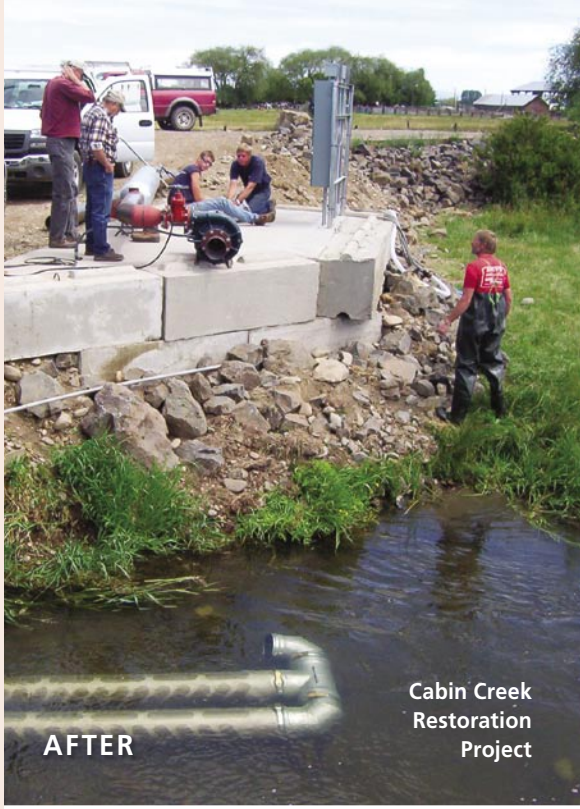
Watershed Watch
Upper Yakima Basin WRIA 39

The upper Yakima River watershed, located in Kittitas and Yakima Counties, drains almost 2,135 square miles (1,366,400 acres) of land. The river, nearly 100 miles long, has a gentle gradient and once supported extensive floodplains, channels, and headwater lakes; however, three large storage reservoirs have radically changed the nature of the river systems.

About 47% of the watershed is in federal ownership, including Forest Service and military, and 11% is under state management. Around 16% is zoned agricultural, not including rangelands which are significant. Population in the watershed exceeds 55,000 people. Kittitas County and its cities, such as Ellensburg, Cle Elum, Ronald, and Roslyn, are experiencing considerable population growth from new development. In rural areas and smaller cities, this development is mostly conversion of forested lands to residential development. Near Ellensburg, agricultural lands are being converted to residential, commercial, and industrial uses.

Community Work Party at Holmes Floodplain Restoration

PHOTOS BY YAKIMA BASIN FISH & WILDLIFE RECOVERY BOARD

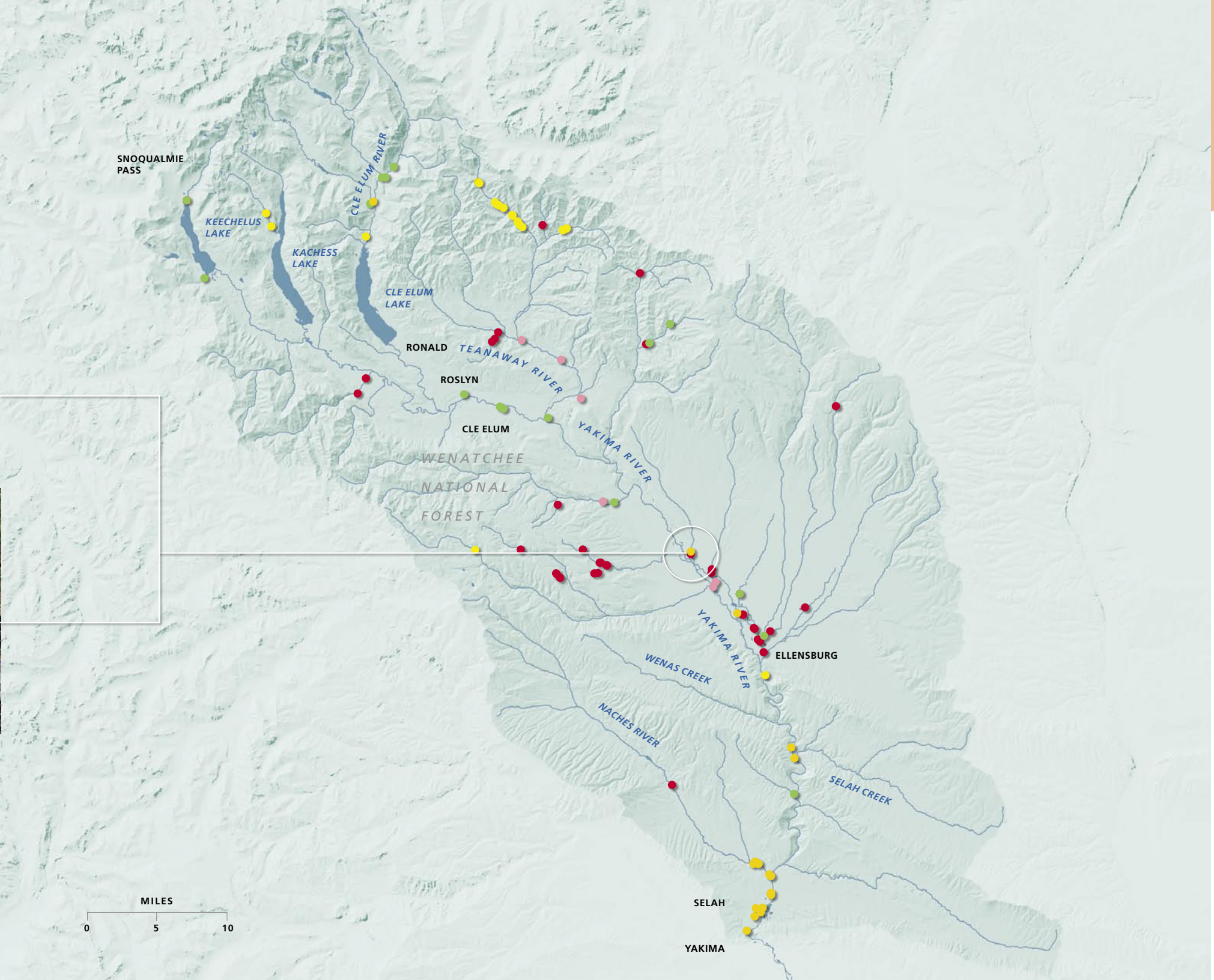


Cabin Creek Restoration Project

Cabin Creek Fish Passage Project

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous


SNOQUALMIE PASS
KEECHELUS LAKE
KACHESS LAKE
CLE ELUM RIVER
CLE ELUM LAKE
RONALD
TEANAWAY RIVER
ROSLYN
CLE ELUM
YAKIMA RIVER
WENATCHEE NATIONAL FOREST
YAKIMA RIVER
ELLENSBURG
WENAS CREEK
NACHES RIVER
SELAH CREEK
SELAH
YAKIMA
MILES
0
5
10

MIDDLE COLUMBIA SALMON RECOVERY REGION

UPPER YAKIMA BASIN

WRIA 39

WATER RESOURCE INVENTORY AREA

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
FERC-licensed facilities	There are no FERC-licensed facilities in WRIA 39

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete barriers: 8; Partial barriers: 18
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results
Run size achieved, 5 year average pre- and post listing. Wild component of Yakima Major Population Group.	Pre-listing: 938; Post-listing: 2,963
Juvenile production achieved (baseline mean)	36,966

Is water clean enough to support wild salmon?

Indicator	Measured Results
Water quality index parameters	Fecal coliform: 14 meeting, 4 not meeting; Dissolved oxygen: 19 meeting, 2 not meeting; pH: 26 meeting, 1 not meeting; Temperature: 45 meeting, 28 not meeting

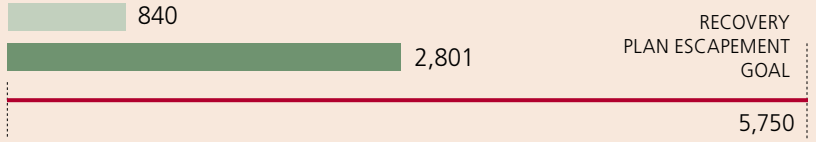
Stream segments meeting standard

Stream segments not meeting standard

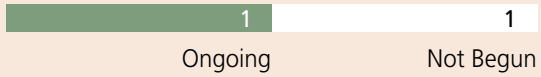
Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flows set	No state instream flows set; basin is managed via federal basin adjudication process
Percent of time flow met during fish critical period **August 1 to September 30**	Not applicable. Flow regimes are negotiated annually to meet available water supply

Does harvest management protect wild salmon?

Indicator	Measured Results
Wild spawners 5 year average pre- and post listing (Yakima MPG scale)	
Percent of wild salmon run that is harvested, 5 year average pre- and post listing (Yakima MPG scale)	Pre-listing 10% Post listing 5%

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does a scientific evaluation of practices exist?	No WDFW hatchery in this watershed. WRIA 37 hatchery reconditions kelt for this watershed; recovery plan actions begun. Hatchery Scientific Review Group review pending.
If so, what actions have been accomplished?	

Upper Columbia Salmon Recovery Region

PHOTOS BY CHRIS DRIVDAHL

The Upper Columbia River Salmon Recovery Region in north central Washington includes the Columbia River and its tributaries upstream of the confluence of the Yakima River to the base of Chief Joseph Dam. River valleys are deeply incised and maintain low gradients except in headwaters. The climate includes extremes in temperatures and precipitation, with most precipitation falling in the mountains as snow. Melting snowpack, groundwater, and runoff maintain stream flows.

A large portion of the Upper Columbia Basin is publicly owned. The first draft recovery plan was completed in June 2005; subsequent drafts led to a Federal Register posting in September 2006, currently under review. The plan addresses Upper Columbia spring Chinook and steelhead, and three "core" areas supporting bull trout populations.

Key Facts

LISTED FISH

Steelhead (threatened)
Spring Chinook (threatened)
Bull trout (threatened)

MAJOR FACTORS LIMITING RECOVERY

- Hydropower system mortality on Columbia River
- Impaired stream flows in tributaries
- Barriers to fish passage in tributaries
- Excessive sedimentation
- Degraded riparian habitat
- Degraded water quality and temperature
- Altered flood plain and channel morphology
- Harvest

RECOVERY PLANNING STATUS

Draft recovery plan for Chinook, steelhead, and bull trout posted in Federal Register September 2006.

REGIONAL RECOVERY ORGANIZATION

Upper Columbia Salmon Recovery Board.

FEDERALLY RECOGNIZED TRIBES

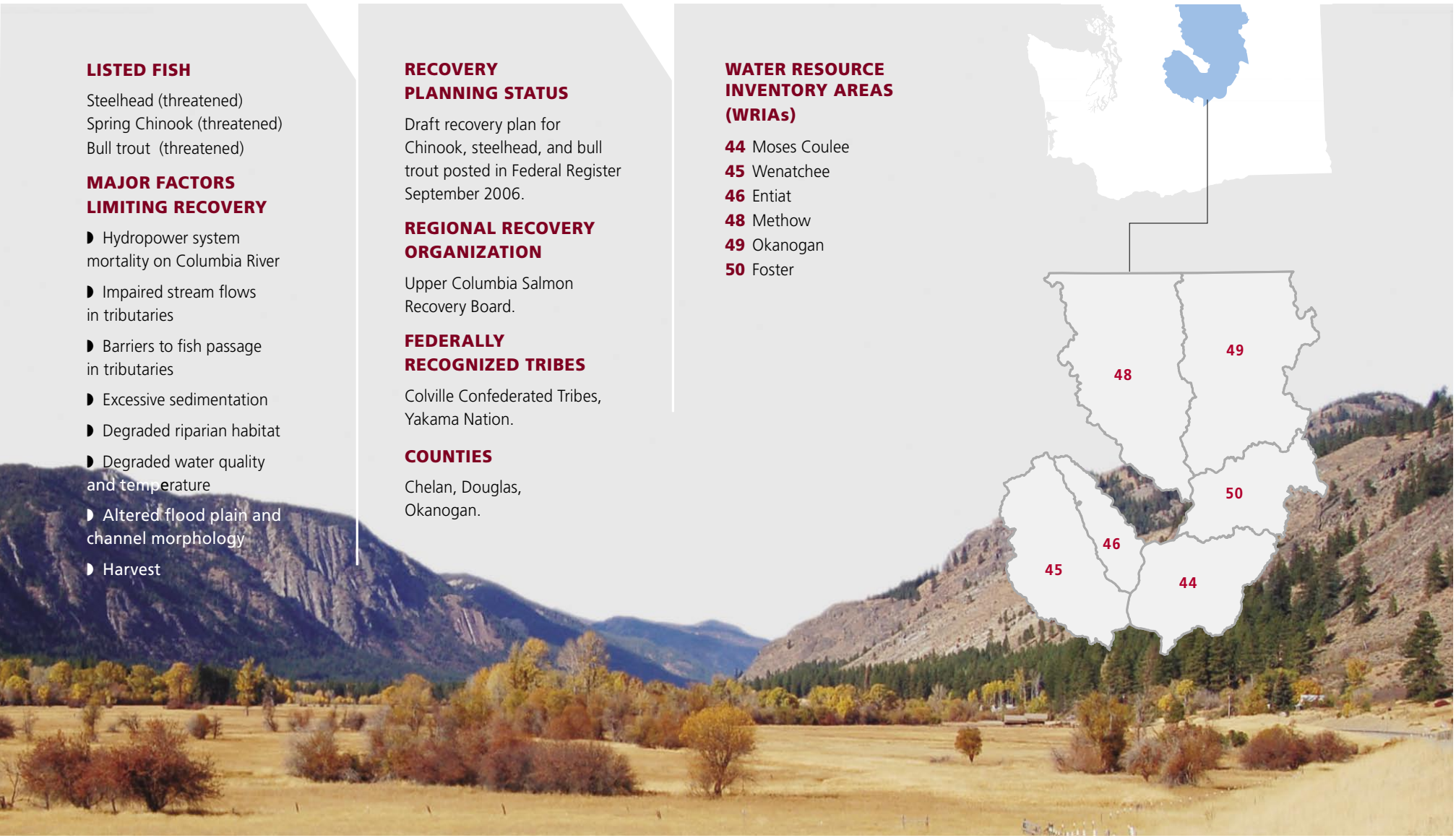
Colville Confederated Tribes, Yakama Nation.

COUNTIES

Chelan, Douglas, Okanogan.

WATER RESOURCE INVENTORY AREAS (WRIAs)

44 Moses Coulee
45 Wenatchee
46 Entiat
48 Methow
49 Okanogan
50 Foster



UPPER COLUMBIA SALMON RECOVERY REGION

Fish Passage Projects

- 2004 to Present
- Pre 2004

Habitat Projects

- 2004 to Present
- Pre 2004

Priority Habitat Areas

PASAYTEN WILDERNESS

METHOW RIVER

WRIA 48

CHEWUCH RIVER

TWISP RIVER

TWISP

PALMER LAKE

COLVILLE NATIONAL FOREST

OKANOGAN RIVER

OMAK

OMAK LAKE

WRIA 49

COLVILLE INDIAN RESERVATION

BREWSTER

COLUMBIA RIVER

WRIA 50

Grand Coulee Dam

LAKE WENATCHEE

WRIA 46

ENTIAT RIVER

WRIA 45

WENATCHEE RIVER

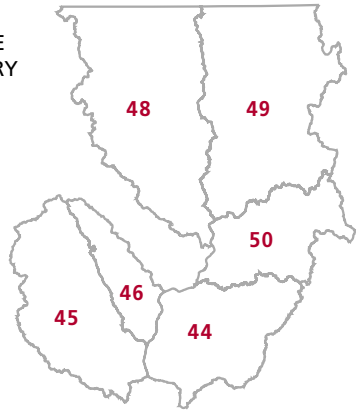
WENATCHEE

WRIA 44

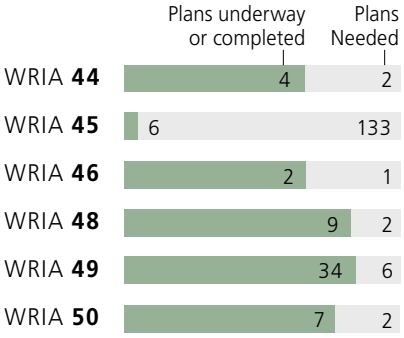
MILES

0 15 30

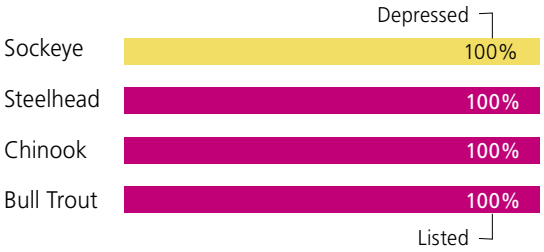
WATER RESOURCE INVENTORY AREAS (WRIAs)

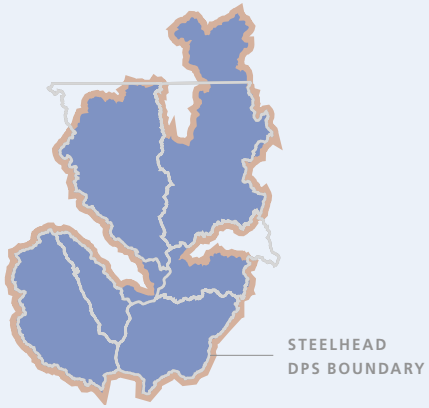


Watershed Cleanup Plans

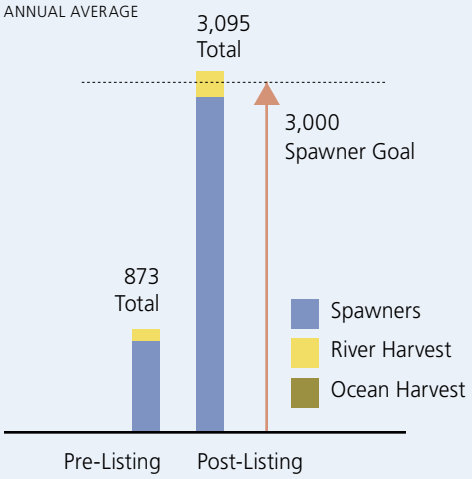


Fish Status

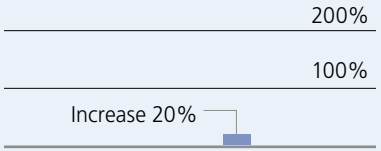


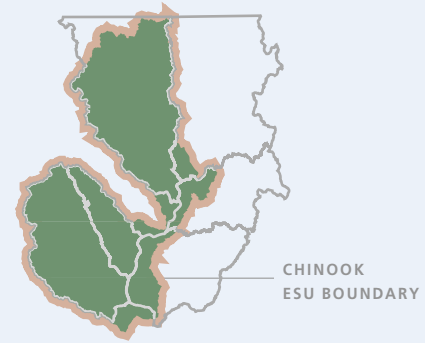


Steelhead Wild Adult Abundance DPS Scale[22]

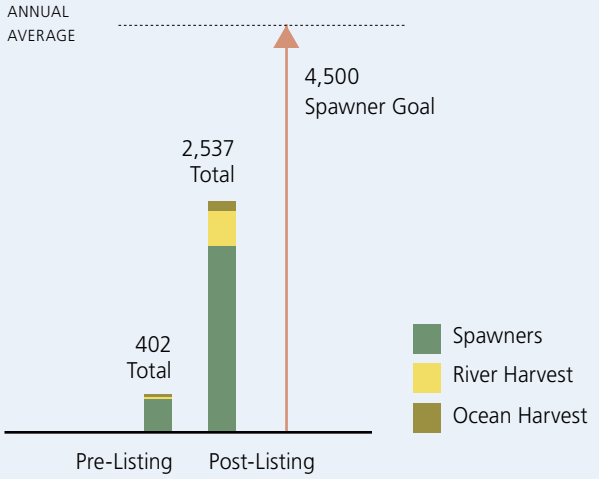


Steelhead Wild Juvenile Production[23] Since Listing

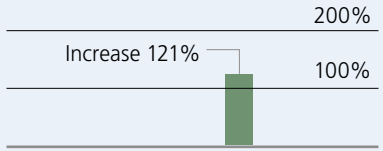




Chinook Wild Adult Abundance ESU Scale[22]



Chinook Wild Juvenile Production[24] Since Listing



UPPER COLUMBIA SALMON RECOVERY REGION

WENATCHEE BASIN

WRIA 45

WATER RESOURCE INVENTORY AREA

Watershed Watch
Wenatchee Basin WRIA 45

The 1,370 square mile (854,000 acre) Wenatchee watershed lies completely within Chelan County. Federal and State lands comprise over 90% of the WRIA. Chiwawa, White, and Little Wenatchee Rivers along with the lower and upper Wenatchee River are the main watercourses, with numerous smaller creeks. Less than 10% of the watershed is in private ownership, most of which is concentrated along valley bottoms. Land uses in rural areas of the watershed are primarily forest management and production, orchard production, scattered residences, lodging facilities, agricultural support facilities, and small home-based industries.

Currently orchards comprise one of the largest private land uses (by acreage) in the WRIA. Approximately 23,850 people reside within the watershed on a full- or part-time basis, and the population in the WRIA is projected to increase approximately 2.4% per year between 2000 and 2025, primarily on privately owned land in the lower elevations and valley bottoms along the Wenatchee River and its major tributaries.

Floodplain Riparian Protection Project at Wenatchee River

White River Habitat Acquisition

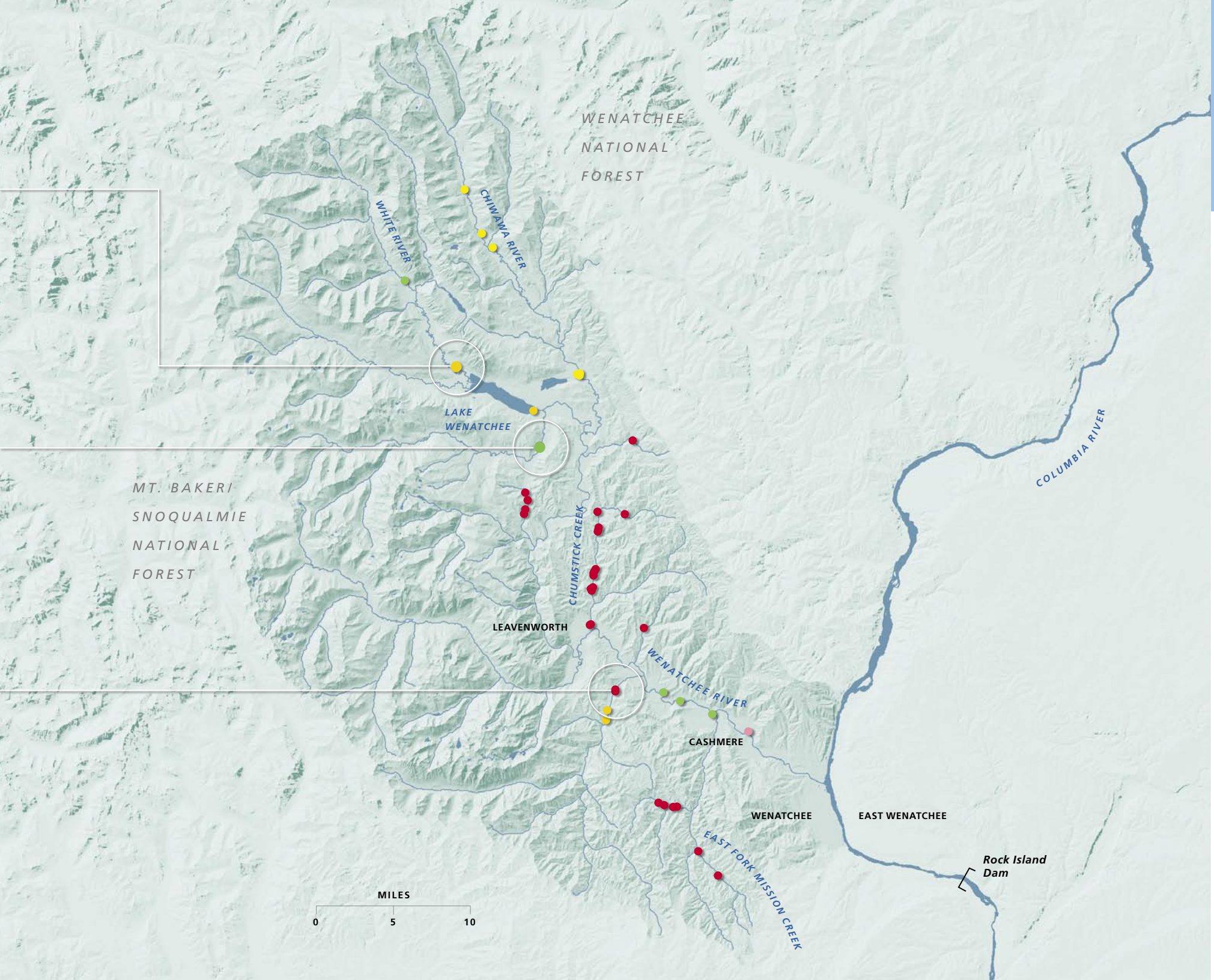
Nason Creek Off-Channel Habitat Restoration

Peshastin Creek Fish Barrier Removal

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous

PHOTOS BY CHELAN COUNTY LEAD ENTITY


WENATCHEE
NATIONAL
FOREST
WHITE RIVER
CHIWAWA RIVER
LAKE
WENATCHEE
MT. BAKERI
SNOQUALMIE
NATIONAL
FOREST
CHUMSTICK CREEK
LEAVENWORTH
WENATCHEE RIVER
CASHMERE
WENATCHEE
EAST WENATCHEE
EAST FORK MISSION CREEK
COLUMBIA RIVER
Rock Island
Dam
MILES
0
5
10

UPPER COLUMBIA SALMON RECOVERY REGION

WENATCHEE BASIN

WRIA 45

WATER RESOURCE INVENTORY AREA

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
FERC-licensed facilities	There are no FERC-licensed facilities in WRIA 45

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete barriers: 14; Partial barriers: 17
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results		
Run size achieved, 5 year average pre- and post listing. Wild component of Wenatchee-Methow Major Population Group.	Steelhead	Pre-listing	873
		Post-listing	3,095
	Chinook	Pre-listing	402
		Post-listing	2,537
Juvenile production achieved (baseline mean)	Steelhead: 36,211 Chinook: 22,261		

Is water clean enough to support wild salmon?

Indicator	Measured Results		
Water quality index parameters	Fecal coliform	35	31
	Dissolved oxygen	58	3
	pH	66	8
	Temperature	39	70

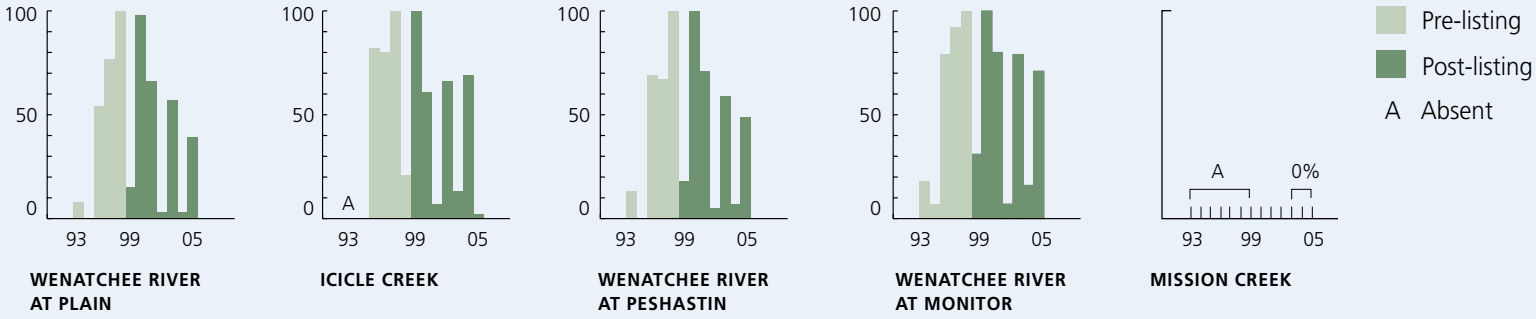
Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Actual Instream flow set	Yes. Rule adopted 1983. 50%exceedence allowance

Percent of time flow met during fish critical period **August 1 to September 30**



Does harvest management protect wild salmon?

Indicator	Measured Results
Recovery plan spawner escapement goal (ESU scale)	Steelhead: 3,000 Chinook: 4,500
Wild spawners 5 year average pre- and post listing (ESU scale)	**Steelhead** Pre-listing 764; Post-listing 2,856 **Chinook** Pre-listing 354; Post-listing 2,030
Percent of wild salmon run that is harvested 5 year average pre- and post listing (ESU scale)	**Steelhead** Pre-listing **12%**; Post-listing **8%** **Chinook** Pre-listing **12%**; Post-listing **20%**

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does a scientific evaluation of practices exist?	Recovery plan recommendations complete; Hatchery Scientific Review Group pending
If so, what actions have been accomplished?	29 Implemented; 18 Ongoing; 11 Not Begun

Snake River Salmon Recovery Region

PHOTOS BY CHRIS DRIVDAHL

The Snake River Salmon Recovery Region is located in the southeastern corner of Washington. Rolling, semi-arid crop and pasture lands are flanked by the forested Blue Mountains to the south. The Columbia, Snake, Grande Ronde, Tucannon, and Walla Walla Rivers drain the recovery region. The Snake River is a major transportation corridor for many of the region's products, which are barged downstream to Columbia River ports.

The recovery region is sparsely populated, with residents scattered throughout the area in communities of less than 1,000 people or clustered in a few larger cities. The draft recovery plan was completed in June 2005 and posted in the Federal Register in March 2006. The plan covers portions of the middle Columbia steelhead, Snake River steelhead, fall/spring/summer Chinook salmon, and bull trout.

Key Facts

LISTED FISH

Steelhead (threatened)
Sockeye (endangered)[25]
Chinook (threatened)
Bull trout (threatened)

MAJOR FACTORS LIMITING RECOVERY

- Hydropower system mortality on Columbia River
- Impaired stream flows in tributaries
- Barriers to fish passage in tributaries
- Excessive sedimentation
- Degraded riparian habitat
- Degraded water quality and temperature
- Altered channel morphology
- Harvest

RECOVERY PLANNING STATUS

Draft recovery plan completed in June 2005 and posted in Federal Register in March 2006.

REGIONAL RECOVERY ORGANIZATION

Snake River Salmon Recovery Board.

FEDERALLY RECOGNIZED TRIBES

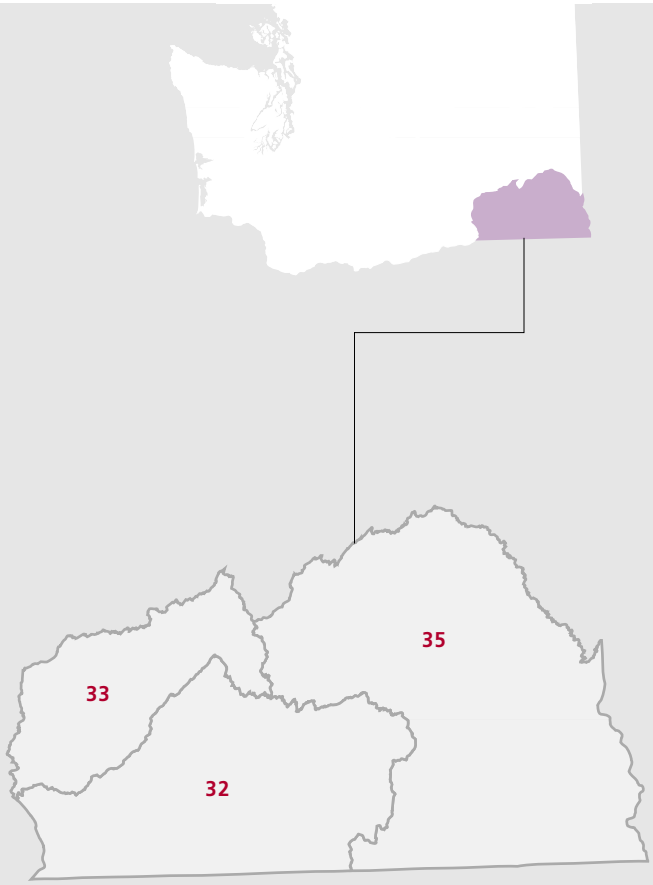
Nez Perce and Confederated Tribes of the Umatilla Reservation.

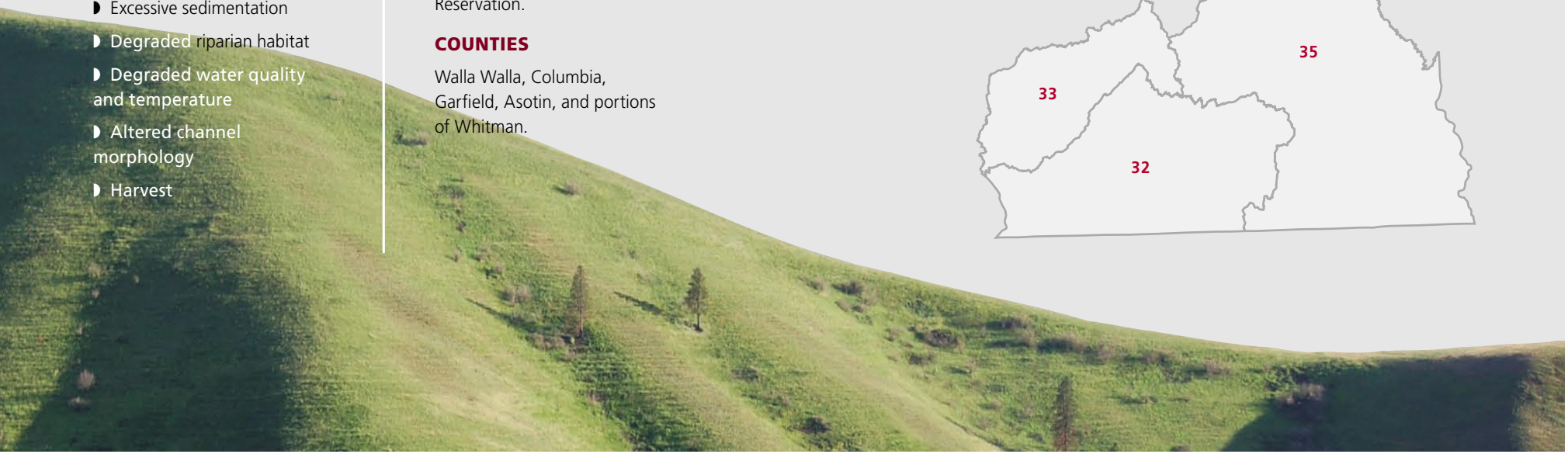
COUNTIES

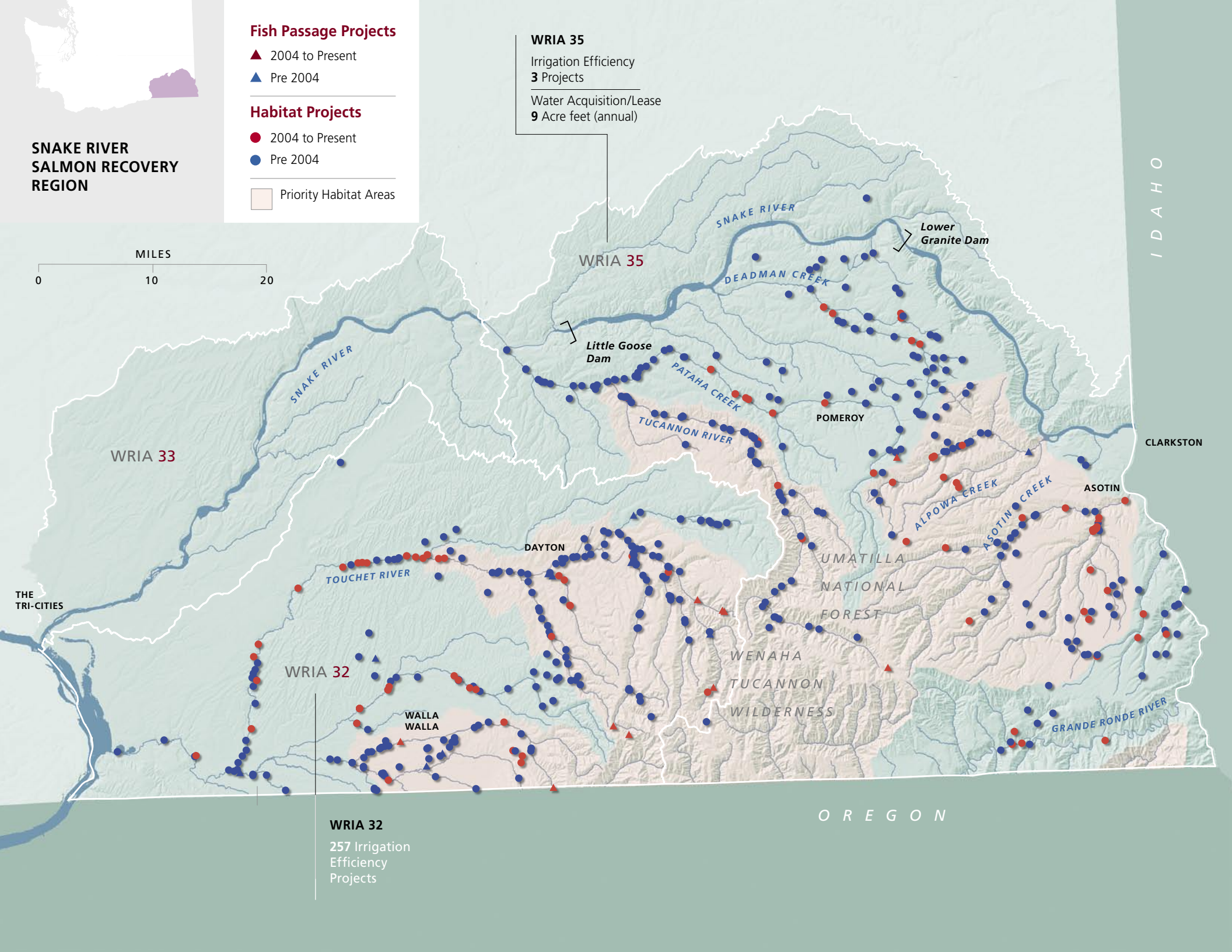
Walla Walla, Columbia, Garfield, Asotin, and portions of Whitman.

WATER RESOURCE INVENTORY AREAS (WRIAs)

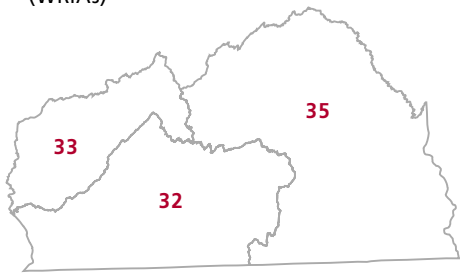
32 Walla Walla
33 Lower Snake
35 Middle Snake



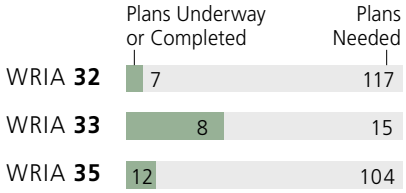



SNAKE RIVER SALMON RECOVERY REGION
Fish Passage Projects
2004 to Present
Pre 2004
Habitat Projects
2004 to Present
Pre 2004
Priority Habitat Areas
WRIA 35
Irrigation Efficiency
3 Projects
Water Acquisition/Lease
9 Acre feet (annual)
MILES
0
10
20
WRIA 35
WRIA 33
WRIA 32
SNAKE RIVER
Lower Granite Dam
Little Goose Dam
DEADMAN CREEK
PATAHA CREEK
TUCANNON RIVER
POMEROY
CLARKSTON
ASOTIN
ALPOWA CREEK
ASOTIN CREEK
DAYTON
TOUCHET RIVER
THE TRI-CITIES
WALLA WALLA
UMATILLA NATIONAL FOREST
WENAHA TUCANNON WILDERNESS
GRANDE RONDE RIVER
IDAHO
OREGON
WRIA 32
257 Irrigation Efficiency Projects

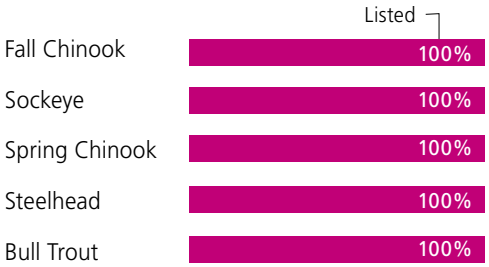
WATER RESOURCE INVENTORY AREAS (WRIAs)

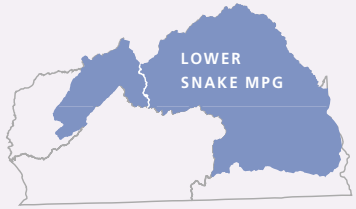


Watershed Cleanup Plans



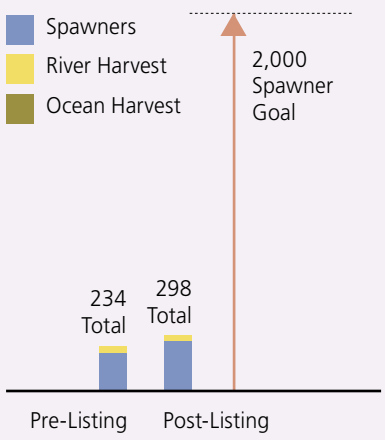
Fish Status



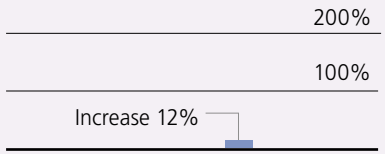


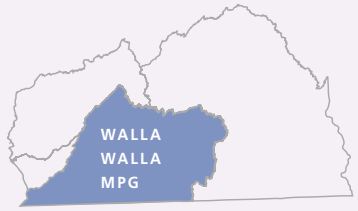
Snake River Steelhead Wild Adult Abundance Lower Snake MPG

ANNUAL AVERAGE



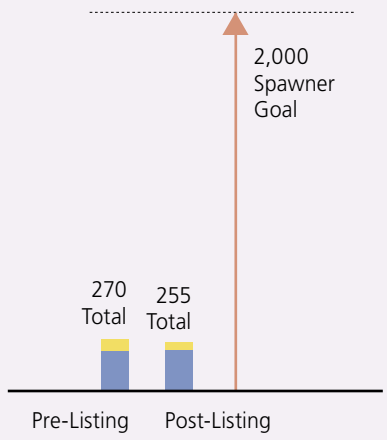
Steelhead Wild Juvenile Production[28] Since Listing





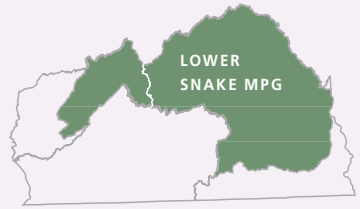
Mid-Columbia Steelhead Wild Adult Abundance Walla Walla MPG[26]

ANNUAL AVERAGE



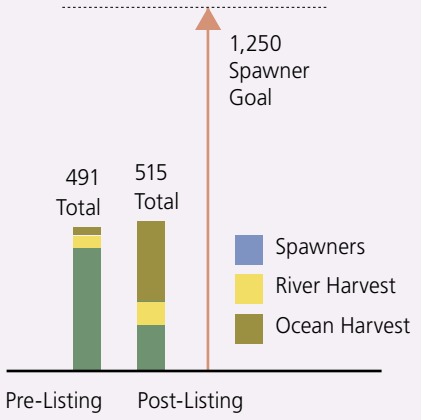
Steelhead Wild Juvenile Production Since Listing

Data Not Available

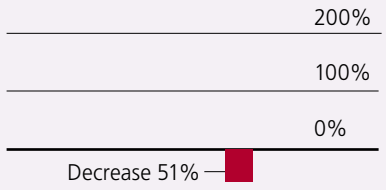


Spring Chinook Wild Adult Abundance Lower Snake MPG[27]

ANNUAL AVERAGE



Spring Chinook Wild Juvenile Production[28] Since Listing



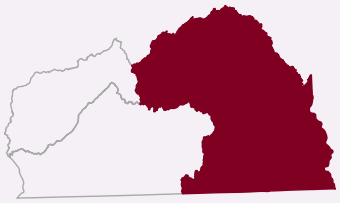
SNAKE RIVER SALMON RECOVERY REGION

MIDDLE SNAKE (TUCANNON) BASIN

WRIA 35

WATER RESOURCE INVENTORY AREA

Watershed Characterization
Middle Snake (Tucannon) Basin WRIA 35



The Middle Snake watershed is located in the extreme southeast corner of Washington, bordered by Oregon to the south and Idaho to the east. The basin drains approximately 2,250 square miles (1,440,000 acres) within the state. Elevation ranges from 6,500 feet to 650 feet above sea level, while precipitation ranges from over 40 inches per year at higher elevations to 7 inches per year along the Snake River. The watershed encompasses portions of Asotin, Whitman, Garfield, and Columbia Counties. Most of Asotin County's 20,551 people live in Asotin or Clarkston and neighboring communities.

Whitman County and Columbia County portions of the basin do not have major population centers, and the city of Pomeroy is the most populated area in Garfield County with 1,517 residents. Population growth has been slow. Private land comprises 1,711 square miles (76%) of the WRIA, while the federal government manages 436 square miles (19%), and the state of Washington manages 103 square miles (~5%). Primary surface water bodies include the Snake River, Tucannon River, Asotin Creek, and Pataha Creek. Little Goose and Lower Granite Dams impound the Snake River, backing water upstream for about 40 miles to the city of Asotin. From Asotin to Hells Canyon Dam, about 100 miles, the river is free-flowing.

About 43% of the land area has been converted to crop and livestock production, with grazing occurring on about 37% of the watershed. Non-irrigated row crops, primarily wheat, are found on roughly 37% of land in the watershed. Coniferous forests cover approximately 20%, while a mixture of shrubs and trees covers 7%. Recent wildfires have burned more than 100,000 acres of the WRIA, or nearly 7% of the total area.

SALMON RECOVERY FUNDING BOARD

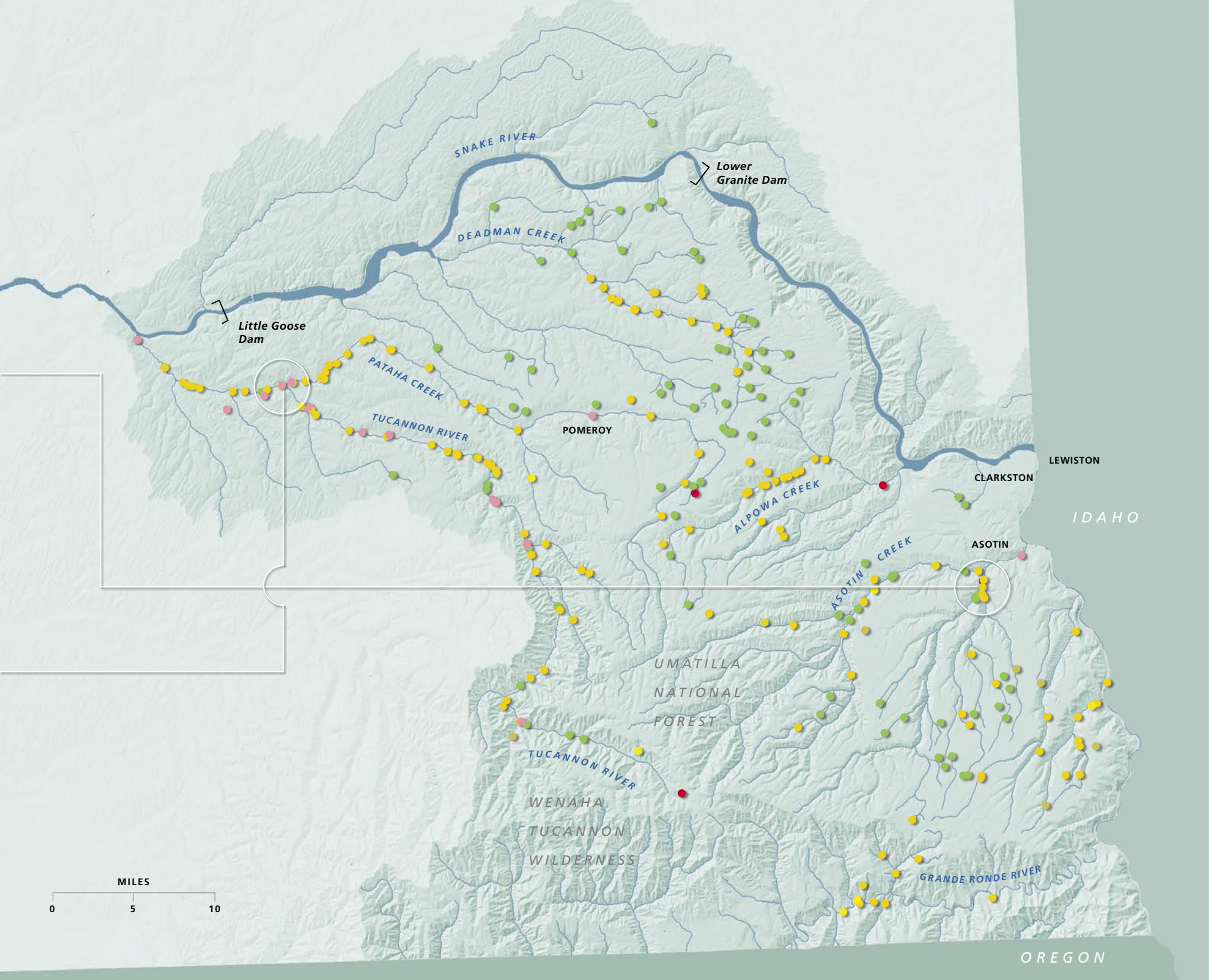
George Creek Instream and Riparian Projects

SNAKE RIVER SALMON RECOVERY BOARD

Tucannon River Diversion Screen Project

RESTORATION PROJECTS

- Fish Passage
- Riparian
- Instream Habitat
- Instream Flows
- Estuary
- Upland
- Miscellaneous


SNAKE RIVER
Lower Granite Dam
DEADMAN CREEK
Little Goose Dam
PATAHA CREEK
TUCANNON RIVER
POMEROY
LEWISTON
CLARKSTON
IDAHO
ALPOWA CREEK
ASOTIN
ASOTIN CREEK
UMATILLA NATIONAL FOREST
TUCANNON RIVER
WENAHA TUCANNON WILDERNESS
GRANDE RONDE RIVER
OREGON
MILES
0
5
10

SNAKE RIVER SALMON RECOVERY REGION

MIDDLE SNAKE (TUCANNON) BASIN

WRIA 35

WATER RESOURCE INVENTORY AREA

MIDDLE SNAKE (TUCANNON) BASIN WRIA 35 RECOVERY QUESTIONS

Are hydroelectric facilities operating in a "fish friendly" manner?

Indicator	Measured Results
FERC-licensed facilities	There are no FERC-licensed facilities in WRIA 35

Are streams accessible to wild salmon?

Indicator	Measured Results
Inventory of major blockages	Complete barriers: 3; Partial barriers: 13
Miles of anadromous waters inaccessible	Not available

Are listed populations abundant and productive?

Indicator	Measured Results
Run size achieved 5 year average pre- and post listing. Wild component of Major Population Group indicated.	Snake River Steelhead (Lower Snake MPG): Pre-listing 234; Post-listing 298
	Mid-Columbia Steelhead (Walla Walla MPG): Pre-listing 270; Post-listing 255
	Spring Chinook (Lower Snake MPG): Pre-listing 1,375; Post-listing 515
Juvenile production achieved (baseline mean)	Steelhead: 20,984 Fall Chinook: 7,529 Spring Chinook: 43,433

Is water clean enough to support wild salmon?

Indicator		Measured Results	
Water quality index parameters	Fecal coliform	15	15
	Dissolved oxygen	7	3
	pH	9	9
	Temperature	11	72

Stream segments meeting standard

Stream segments not meeting standard

Do rivers and streams have flows that support wild salmon?

Indicator	Measured Results
Instream flows set	Flow recommendations under negotiations
Percent of time flow met during fish critical period **August 1 to September 30**	Not available.

Does harvest management protect wild salmon?

Indicator		Measured Results
Wild spawners 5 year average pre- and post listing (MPG scale)	**Snake River Steelhead (Lower Snake MPG)**	Pre-listing 198 Post-listing 258 2,000 RECOVERY PLAN ESCAPEMENT GOAL
	Spring Chinook (Lower Snake MPG)	Pre-listing 418 Post-listing 281 750 RECOVERY PLAN ESCAPEMENT GOAL
	Mid-Columbia Steelhead (Walla Walla MPG)	Pre-listing 207 Post-listing 281 2,000 RECOVERY PLAN ESCAPEMENT GOAL
Percent of wild salmon run that is harvested 5 year average pre- and post listing (MPG scale)	**Snake River Steelhead**	Pre-listing **15%** Post-listing **13%**
	Mid-Columbia Steelhead	Pre-listing **23%** Post-listing **18%**
	Spring Chinook	Pre-listing **15%** Post-listing **17%**

Do hatchery practices meet the needs of wild salmon?

Indicator	Measured Results
Does a scientific evaluation of practices exist?	Recovery plan recommendations complete; Hatchery Scientific Review Group pending
If so, what actions have been accomplished?	3 Actions Implemented; 1 Ongoing

Northeast Salmon Recovery Region

PHOTOS BY CHRIS DRIVDAHL

The Northeast Washington Salmon Recovery Region includes parts of Lincoln, Spokane, Ferry, Stevens, and Pend Oreille Counties. It encompasses the mainstem Columbia River and tributaries above Chief Joseph Dam to the Canadian border, Spokane River and its tributaries upstream to Post Falls Dam, and the Pend Oreille River and its tributaries from the Canadian border upstream to Albeni Falls Dam. It includes mountain ranges with elevations from 5,000 to 7,000 feet.

Major river valleys include the Spokane, Pend Oreille, Colville, Kettle, San Poil, and Columbia. The Pend Oreille River is the second largest river in Washington and flows for 155 miles from its headwaters at Lake Pend Oreille to the confluence with the Columbia River in British Columbia. The region is mostly rural with large areas of forested mountains and valleys of open pasture. There is no regional recovery group at present, but efforts are underway to evaluate whether local tribes, stakeholders and governments want to establish some type of regional organization to work towards recovery of listed bull trout.

Key Facts

LISTED FISH

Bull trout (threatened).

RECOVERY PLANNING STATUS

Federal bull trout draft recovery plan; 5-year status review under way.

REGIONAL RECOVERY ORGANIZATION

A regional recovery organization has not formed, but discussions are under way.

FEDERALLY RECOGNIZED TRIBES

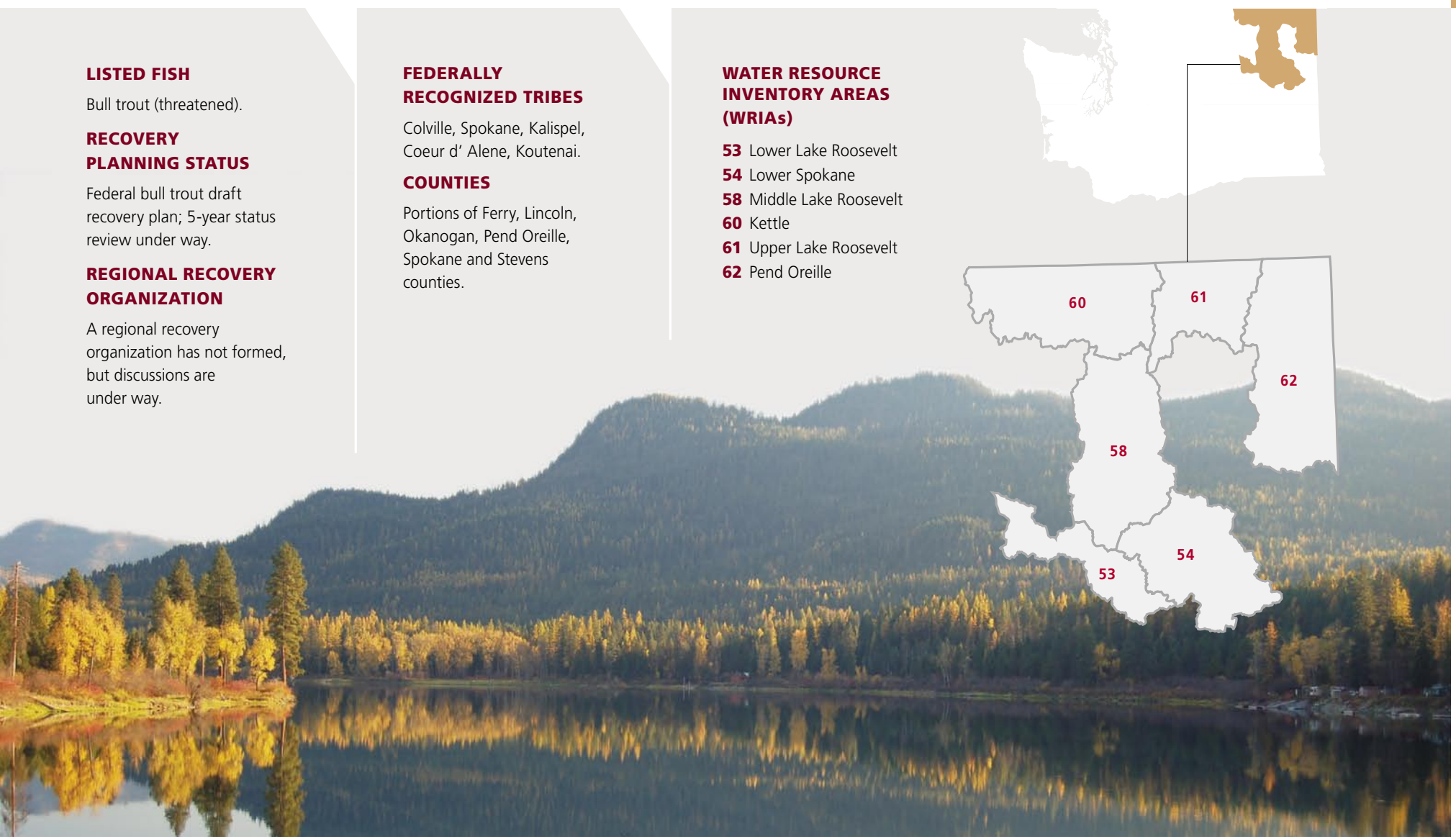
Colville, Spokane, Kalispel, Coeur d' Alene, Koutenai.

COUNTIES

Portions of Ferry, Lincoln, Okanogan, Pend Oreille, Spokane and Stevens counties.

WATER RESOURCE INVENTORY AREAS (WRIAs)

53 Lower Lake Roosevelt
54 Lower Spokane
58 Middle Lake Roosevelt
60 Kettle
61 Upper Lake Roosevelt
62 Pend Oreille



NORTHEAST SALMON RECOVERY REGION

Fish Passage Projects

- 2004 to Present
- Pre 2004

Habitat Projects

- 2004 to Present
- Pre 2004

MILES
0 10 20

CANADA

WRIA 60

WRIA 61

WRIA 62

WRIA 58

WRIA 54

WRIA 53

KETTLE RIVER

COLUMBIA RIVER

PEND OREILLE RIVER

ROOSEVELT LAKE

LONG RIVER

BANKS LAKE

KETTLE FALLS

COLVILLE

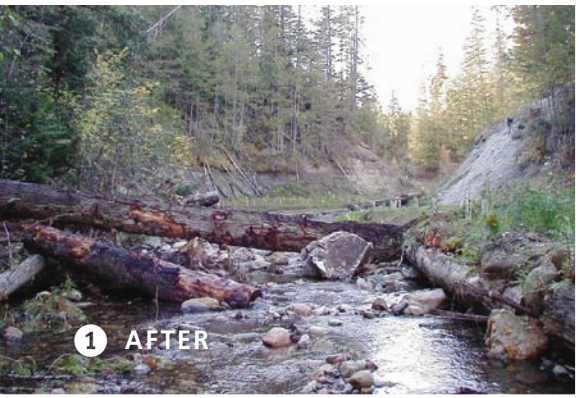
NEWPORT

SPOKANE

IDAHO

COLVILLE INDIAN RESERVATION

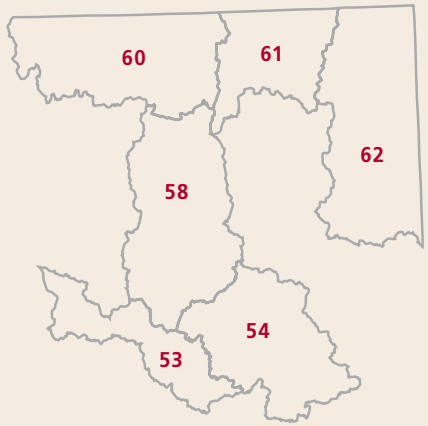
Grand Coulee Dam



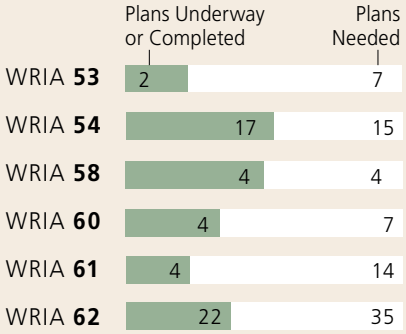
Cedar Creek Dam (1) and Reservoir (2) Removal

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

WATER RESOURCE INVENTORY AREAS (WRIAs)



Watershed Cleanup Plans



Fish Status